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SOLUBLE COMPRESSED PELLETS for HYPODERMIC MEDICATION.

BY L. WOLFF, M. D.

Read at the Pharmaceutical Meeting, Nov. 16th.

With the introduction of hypodermic medication as a permanent feature in therapeutics a demand was made on the pharmacist to prepare the proper remedies required for this use in suitable form. The principal agents thus required were the salts of morphia, and to have them in a most concentrated form, the solution of Magendie, containing two grains of the morphia salt to each drachm of water, was usually dispensed.

It was soon found, however, that this was too bulky to carry in the quantities that might be required, and besides that it would not keep well, being subject to decomposition at the expense of the morphia salt, by the formation of conservæ, which, like fungi, are apt to create irritation of the skin and abscesses, often of a serious nature. The addition of such antiseptics as glycerin, carbolic acid and chloral hydrate, though obviating this difficulty, increases the burning pain accompanying the injection, in such a degree as to render these admixtures certainly undesirable.

To avoid all of these defects practitioners soon got into the habit of carrying powders containing usually a quarter grain of morphia sulphate each, to which is often admixed a minute quantity of atropia, to correct the unpleasant effects of the morphia and to increase its anæsthetic properties, which powders are then dissolved in a syringe-ful of water when needed.

But even the morphia powders prove inconvenient, for various reasons. As usually one quarter grain cannot be accurately weighed on the pharmacist's dispensing scales, they are rarely so evenly divided as desirable for the purpose, besides they are also too bulky to carry in

quantities, and not always, at the pressure of the moment to relieve pain, well or easily removed from the paper in which they are contained, even if they should not have been previously partly spilled in the pocket or pocket-case of the physician. The morphia salt in this form is also subject to the action of atmospheric moisture or the warmth of the body, and forms as a consequence a concrete mass not easily dissolved, if not actually deteriorated.

Impressed by these objections, my attention was recently called by my friend Dr. H. Augustus Wilson to the advisability of making the powders into small pills, which I accomplished by an admixture of an equal quantity of white sugar and a little water.

These granules so prepared, however, were not readily soluble; the sugar, besides, increased the burning sensation already experienced in subcutaneous injections.

With a view of increasing the solvent action of the water on the surface of the powder, I had constructed a small pill press on the plan suggested and described by Prof. Remington (*"Amer. Jour. Pharm.,"* March, 1876, page 97), and with it overcame the mechanical obstacle, while we were soon led to substitute sodium chloride for the sugar as a disintegrator (properly so styled by Dr. Wilson in his paper recently read on this subject before the "Philadelphia County Medical Society"), which in dilute solutions is painless and devoid of irritant action when applied to mucous surfaces, forming as it does a principal ingredient of the liquids of the organism.

As morphia sulphate, however, seemed to dissolve badly and tardily in a solution of sodium chloride, we adopted in its place the hydrochlorate of that alkaloid, already suggested by Trousseau for hypodermic injections, and recommended by English authors, amongst whom "Christison" gave it the preference, because he attributed to it a more constant action, unaccompanied by unpleasant symptoms.

With these, and by means of the pill press, we obtained pellets forming rapidly clear solutions in a little water, while by the presence of the sodium chloride the burning pain of the injection seemed to be considerably diminished, and its absorption, probably due to the crystalloid nature of the salt and its superior diffusibility, seemed to be promoted. (Pellets here exhibited.)

The full effect of a hypodermic injection of morphia is usually experienced in from 12 to 15 minutes, whereas by the use of these

pellets both Dr. Wilson and myself have noted it to take place in from 4 to 10 minutes.

The pellets can be easily made by any pharmacist having the necessary pill press, but should not be compressed with too much force (a tap with a light wooden mallet usually suffices), else the solutions will not be rapidly enough obtained.

When used, they should be first moistened with one drop of water out of the filled syringe, then broken up with the blunt point of the syringe, all the water added, then sucked up and forced out of the syringe two or three times, until the solution is complete, which we have frequently succeeded doing in 22 seconds.

I would enumerate the advantages of these pellets as follows :

1. They occupy the smallest possible space.
2. They can be carried without paper (I usually dispense them in a glass tube, about one inch in length, closed on both ends by small corks).
3. They are always accurate; containing one quarter grain of sodium chloride, besides the medicinal agent; their weight is at least half a grain, which can be readily weighed out; for the same reasons, the possible inaccuracy in weights or weighing is reduced to one-half.
4. The morphia salts, by the presence of sodium chloride, possessing antiseptic properties, can be preserved for an indefinite period.
5. Their solutions give less pain than the ordinary solutions of either morphia salts alone or with their antiseptic admixtures.
6. They can be kept on hand ready made, and therefore dispensed at a smaller cost than the powders.

There is no reason why this form for hypodermic remedies may not be extended to other remedial substances, and as salt is already suggested as an addition to mercuric bichloride for that purpose, this might certainly be so prepared, as well as apomorphia, pilocarpia hydrochlorate, strychnia hydrochlorate, and other remedial agents subcutaneously administered in minute quantities.

Philadelphia, November, 1880.

THE PREPARATION OF SYRUPS BY PERCOLATION.

BY SAMUEL W. GADD, PH.G.

From an Inaugural Essay.

The author is in favor of preparing most syrups by the cold process, and describes the operation as follows :

Take a funnel, for ordinary operations of the capacity of about five pints, the angle of which is about fifty-five degrees, and having a wide throat. Insert a small piece of sponge loosely in the throat of the funnel, to prevent the particles of sugar from passing through. Add the sugar, pour over it the requisite amount or a portion of the menstruum, insert a stopper in the mouth of the funnel and set aside for a short time ; then, removing the stopper, return for repercolation the portion of liquid which immediately flows ; that following will be a saturated solution. In my experiments I learned that a funnel having the specified angle is much better than a cylindrical percolator, or a funnel having a greater angle. For in a cylindrical percolator, the column of sugar being so tall, the portion of liquid at the upper part becomes saturated, and will occupy too much time in passing through. If, on the other hand, a funnel having a greater angle be used, the liquid in its downward passage will continuously cause the bulk of sugar to depress in the centre until it reaches the stopping in the throat of the funnel, when the remaining portion of liquid will pass through unsaturated, and leave a portion of sugar on the sides of the funnel. This difficulty does not occur if a funnel be used having nearly the specified angle, but the sugar sinks uniformly as the liquid passes out, the menstruum thus taking up all the sugar, and passing out as a saturated syrup. If it be required to make a considerable quantity of syrup, as the sugar in the funnel sinks fresh portions of sugar and menstruum may be added alternately, without having been previously weighed or measured ; only care is necessary not to add more menstruum than the sugar requires, and the amount will be readily ascertained by one who has performed the process but once or twice. The result will be precisely the same as if the sugar were weighed and the menstruum measured out, and the flow will be continuous as long as the additions are made. Simple syrup thus obtained near the temperature of 60°F. indicated a specific gravity of 1.324 at 69°F. This is slightly above that of the officinal syrup, which is 1.317. However, if that specific gravity be desired, it may readily be obtained by adding 13.65 cubic

centimeters of water to each liter, or 14 fluidrachms to each gallon of syrup. But for all practical purposes this is unnecessary, as the syrup will keep better if not diluted. Thus obtained it is similar in all respects to that obtained by the officinal process, but is free from the steam-like odor which may often be noticed in that obtained by heat, and also has a clearer and more glittering appearance.

The medicated syrups which I first prepared in this way were the syrups of ginger and of tolu. These were readily obtained, and many of the officinal syrups were successfully made in like manner. The syrup of orange flowers is exceedingly delicate and fragrant prepared in this way, more so than obtained as directed by the Pharmacopœia, as the heat there employed drives off a portion of the volatile odorous principles.

For the syrup of ipecacuanha I have adopted the following formula : Take of fluid extract of ipecacuanha $\text{f}\overline{\text{3}}\text{ii}$; add to it $\text{f}\overline{\text{3}}\text{vi}$ of water ; put it in a vial, cork and shake it ; then let it stand for a day, in order that the apotheme may be precipitated. Pour the liquid upon a filter, and add sufficient water through the filter to make the filtered liquid measure $\text{f}\overline{\text{3}}\text{xii}$. Then take of granulated sugar $\text{}\overline{\text{3}}\text{xxi}$; place in a funnel as previously directed and percolate with the liquid obtained. To the percolated syrup add sufficient simple syrup to bring the measure up to two pints, and mix well by agitation. The result is a syrup having the same strength as that directed by the Pharmacopœia, free from any flocculent precipitate and lighter in color. Some writers have inferred that the apothemical matter precipitated in this manner contains a portion of the emetia, which is the active principle of ipecacuanha. In order to ascertain if such were the case I took the amount of precipitate resulting from one fluidounce of fluid extract of ipecacuanha, but did not experience any uncomfortable result therefrom, thus showing the above assertion to be incorrect.

Syrup of wild cherry is expeditiously prepared by this process, not requiring as much labor nor consuming as much time as when prepared as directed by the Pharmacopœia.

Compound syrup of squill was also readily obtained by following nearly the directions of the Pharmacopœia, but differing in reserving a fluidounce of the water directed, dissolving the tartar emetic therein, adding it to the rest of the liquid, and percolating the sugar therewith as indicated.

Syrup of iodide of iron and syrup of acacia are the only officinal

syrups which it is not practicable to obtain by this process; the former would be decomposed by the continued exposure to the air, and in the latter case the solution of gum is too tenacious to percolate through the sugar.

With these exceptions, I believe all the officinal syrups, together with many others that are not officinal, may be prepared by cold percolation. The principal advantages of making syrups by this process are:

It is a saving of expense where the operator has to create a fire specially for that purpose.

It is a saving of time, as it does not require attention; for when the liquid has passed you know you have a saturated solution.

It is also a far more elegant and pleasant means of preparing them.

EXAMINATION of SOLUTION of CHLORIDE of IRON.

BY HOMER MCCOY.

Read at the Pharmaceutical Meeting, November 16th.

It has been suggested that the solution of chloride of iron is often very deficient in strength. A sample of this solution was obtained and the iron estimated volumetrically by a standard solution of permanganate of potassium, the process and results of which are here given:

The first step was to reduce the *ferric* chloride to *ferrous* form, which was accomplished by means of nascent hydrogen, evolved by the action of dilute sulphuric acid on metallic zinc in a closed apparatus, which excludes the air and prevents oxidation.

Commercial zinc contains a small proportion of iron, and the amount present in the zinc used was .024 per cent., which must be considered in accurate work. 3.061 grams of zinc were used in this estimation, and .024 per cent., or 0.000735 gram was iron, which must be deducted from the final result.

1.926 gram of the solution of ferric chloride was placed in the flask for generating the hydrogen—the apparatus closed and heat applied. When the zinc was all dissolved, the contents were cooled quickly, and then washed out into a beaker, about 300 cc. of distilled water added, care being taken that there be an excess of acid in the solution, and then quickly titrated with the standard solution of potassium permanganate until the last drop perceptibly colored the solution, showing oxida-

tion to be complete, when the reading on the burette showed 17.8 cc. of the standard solution to have been used. The strength of the solution of potassium permanganate had previously been estimated with pure iron wire, and 1 cc. of the solution oxidized 0.004936 gram of iron from *ferrous* to *ferric* form, or was equal to 0.004936 gram of iron; hence 17.8 cc. = 0.08786 gram of iron. Deducting 0.000735 gram, the amount of iron already present in the zinc used, we have left 0.0871 gram, the amount of iron in 1.926 gram of the solution of chloride of iron, or, expressed in percentage, 4.52 per cent.; and as 112, the molecular weight of iron, is to 325, the molecular weight of anhydrous ferric chloride, so is 4.52, the per cent. of iron found, to the per cent. of anhydrous ferric chloride, which is 13.1 per cent.

To find the per cent. of iron in the officinal solution, we quote the Pharmacopœia, which gives the following description and tests for liquor ferri chloridi:

"A reddish-brown liquid, having an acid and strongly styptic taste, and the specific gravity 1.355. Two fluidrachms of the solution, diluted with water and treated with ammonia in excess, yields a precipitate of sesquioxide of iron, which, when washed, dried and ignited, weighs 28.25 grains."

From these figures the percentage of iron and anhydrous ferric chloride is calculated as follows: As 160, the molecular weight of sesquioxide of iron, is to 112, the molecular weight of iron, so is 28.25, the number of grains of sesquioxide yielded by two fluidrachms of the solution to the number of grains of iron in two fluidrachms, which we find to be 19.775 grains. Also, two fluidrachms of the solution, having a specific gravity of 1.355, weighs 154.36 grains, and as just stated, contains 19.775 grain of iron, or, expressed in per cent., 12.8 per cent. Now, as the molecular weight of iron, 112, is to the molecular weight of anhydrous ferric chloride, 325, so is the percentage of iron in the officinal solution, 12.8, to the percentage of anhydrous ferric chloride, which is 37.1 per cent. Comparing these results, we have in the solution analyzed 4.52 per cent. of iron; in the officinal solution 12.8 per cent. iron, and 13.1 per cent. of anhydrous ferric chloride instead of 37.1 per cent. in the officinal solution, proving this solution to be very deficient in strength, which is also indicated by its light color.

Although, as will be seen by this method of estimation, the total amount of iron contained in the preparation was estimated, yet a portion

of the iron was also found to be present in the *ferrous* state, the exact amount of which was not determined. It is the intention to continue this investigation and to extend it to the examination of the tincture of ferric chloride.

MIXTURE FOR WRITING ON GLASS.

BY F. L. SLOCUM.

Read at the Pharmaceutical Meeting, Nov. 16th.

A preparation for writing on glass has lately come upon the market under the comprehensive name of "Diamond Ink." It is to be used with a common pen and at once etches a rough surface on the parts of glass it comes in contact with. It proves to be a very useful article for labeling bottles which are to contain liquids that will destroy common labels.

At the request of Professor Maisch an analysis was made, which proved it to be prepared from ammonium fluoride, barium sulphate and sulphuric acid. The barium sulphate seems to act as an absorbing medium and when the semifluid mass is used it makes a white mark and prevents the spreading of the watery liquid; it also seems to make the acid etch a rougher surface.

It is made by mixing barium sulphate 3 parts, ammonium fluoride 1 part and sulphuric acid a quantity sufficient for decomposing the ammonium fluoride and making the mixture of a semifluid consistency.

The sample examined was contained in a glass bottle holding nearly two fluidrachms and which was thickly coated on the outside with asphaltum, on the inside with a very thick stratum of beeswax, and was stoppered with a rubber stopper.

It is claimed by the manufacturer that the mixture contains no hydrofluoric acid and does not corrode a pen, but, of course, it does corrode a pen and hydrofluoric acid is the one thing that does the etching.

Any one making this mixture and wishing to keep it in glass may coat the bottle inside with paraffin, beeswax or rubber. It should be prepared in a leaden dish, and is preferably kept in a gutta percha or leaden bottle.

PRACTICAL NOTES FROM VARIOUS SOURCES.

Musk Mixture.—L. Virlogeux recommends triturating the musk with an equal weight of sugar into an impalpable powder, which is

passed through a very fine sieve and may be preserved for a long time without deteriorating. For 1 gram of musk 2 grams of this powder are weighed out, mixed with 5 centigrams of powdered tragacanth, and the mixture is rapidly emulsionized by adding in small portions the requisite quantity of syrup and water. Thus prepared the mixture contains the musk in a state of very fine division.—*Rép. de Phar.*, 1880, p. 389.

Preservation of Magendie's Solution.—Dr. H. M. Keyes recommends adding one grain of salicylic acid to two ounces of the solution. This has been successfully employed in Roosevelt Hospital for some years.—*Phila. Med. Times*, Nov. 6.

Decomposition of Cinnamon Water.—From a water obtained by distillation from Chinese cinnamon a considerable amount of cinnamic acid had crystallized out on exposure, and in order to obtain more of the acid, J. B. Enz added to this water 10 drops each of oil of Ceylon cinnamon and of pure glycerin. But instead of cinnamic acid there appeared upon the surface of the water colorless very refractive drops of a benzol-like odor. It seems, therefore, that under certain conditions, the cinnamic acid of cinnamon water may be decomposed in the same manner as by distillation with excess of lime into cinnamene and benzol. Whether this decomposition is due to the presence of protein compounds mechanically carried over in distillation or to other causes has not been ascertained.—*Archiv der Phar.*, October, p. 287.

Cod Liver Oil with Iodoform.—Fonssagrives recommends dissolving 0.25 gram of iodoform in 100 grams of cod liver oil and adding 10 drops of oil of anise. The dose is a tablespoonful two or three times a day. The oil of anise improves the odor and taste of cod liver oil.—*Phar. Zeitschr. f. Russl.*, 1880, p. 562.

Detection of Coloring Matter in Beer.—If a dark colored beer is mixed with twice its volume of crystallized (solid) ammonium sulphate and thrice its volume of stronger alcohol, the mixture will deposit a grey precipitate; if roasted malt was used for the beer the precipitate will be dark brown or black, the supernatant liquid being decolorized in both cases. But in case caramel has been added to the beer the above reagents will produce a grey or brown precipitate, and the liquid will retain a brown color.—*Phar. Centralhalle*, 1880, p. 368, from *Der Bierbrauer*.

Glossy Precipitates of Metals on Glass.—A hot solution of nitrate of antimony (prepared from tartar emetic) is agitated in the glass to be

coated, while the latter is externally cooled with water. The thin deposit is washed with water and sulphuretted hydrogen is conducted into the vessel, producing antimony sulphide of a golden color with a green reflection. In a similar manner a black coating of lead sulphide may be obtained by mixing in the glass vessel solution of lead acetate with a little phosphoric acid and an equal bulk of a mixture of water with a volatile oil (oil of turpentine), and passing sulphuretted hydrogen into it. It is advisable to form this coating upon a thin film of antimony sulphide, when it will adhere more firmly to the glass.—*Phar. Centralhalle*, 1880, p. 381, from *Chem. Ztg.*, No. 42.

Preparation of Tincture of Litmus.—Kretzschmar gives the following directions: Finely powdered litmus is exhausted with cold water and the solution mixed with fine sand and evaporated, sufficient hydrochloric acid being added during the evaporation to impart a red color. The dry residue is powdered and, upon large, plain filters, washed with hot and afterwards with cold water. The residue contains Kane's azolitmin, which is the really valuable principle, and is nearly insoluble in pure water; it is dissolved upon a filter by hot water containing a few drops of ammonia, the filtrate is acidulated with sulphuric acid and accurately neutralized by ammonia. If the solution be largely diluted and then acidulated, nearly pure azolitmin is deposited, while a body remains in solution imparting to the liquid a faint wine-red color. The precipitate may subsequently be dissolved in water containing a trace of ammonia, when a brilliantly blue solution will be obtained; but such a degree of purity is scarcely necessary for the use of litmus as an indicator.—*Zeitschr. f. Anal. Chem.*—*Chemiker Zeitung*.

Liquor Arsenicalis Bromati Clementis.—Dissolve pure potassium carbonate and arsenious acid, of each 3.75 grams, in sufficient distilled water to obtain 360 grams of liquid; add 7.5 grams of bromine, and set aside until colorless. The solution, which is said to improve by age, is given in epilepsy in doses of one or two drops once or twice daily.—*Pharm. Zeitschr. f. Russl.*, 1880, p. 573.

The Detection of Free Acid in Acetic Ether is best accomplished, according to Bouvier, by agitating in a small vial 20 or 25 grams of the ether with 3 or 4 grams of litharge, and setting aside for a day. If free acid was present, the litharge will be covered with a white layer. By washing the sediment well with water, drying and weighing it again, the loss in weight of the litharge will give the amount which has been converted into lead acetate, and from this the amount of free acetic

acid is readily calculated.—*Phar. Zeitung*, 1880, p. 477, from *Jour. Phar. et Chim.*

The Gelatinization of Dialyzed Iron is due to the supersaturation of the liquid with ferric hydrate, either in consequence of too long continued dialysis or on account of the absorption of ammonia from the air. Such a gelatinized preparation may be restored again by the careful addition of solution of ferric chloride. From his own observations, Hager regards dialyzed iron as an effectual remedy.—*Phar. Centralballe*, 1880, p. 387.

Two New Anæsthetics.—Dr. E. Taube reports the results of experiments made with *monochlorethylidene chloride* (spec. grav. 1.372) and *monochlorethylene chloride* (spec. grav. 1.422), which have an odor resembling that of chloroform, and produce anæsthesia without decreasing respiration and circulation. The following products are obtained by the action of chlorine upon ethyl chloride :

Ethyl chloride,	$\text{CH}_3\text{—CH}_2\text{Cl}$	boiling point	12°C.
Ethylene chloride,	$\text{CH}_2\text{Cl—CH}_2\text{Cl}$	" "	35
Ethylidene chloride,	$\text{CH}_3\text{—CHCl}_2$	" "	60
Monochlorethylene chloride,	$\text{CH}_2\text{Cl—CHCl}_2$	" "	115
Monochlorethylidene chloride,	$\text{CH}_3\text{—CCl}_3$	" "	75
Dichlorethylene chloride,	$\text{CHCl}_2\text{—CHCl}_2$	" "	137
Dichlorethylidene chloride,	$\text{CH}_2\text{Cl—CCl}_3$	" "	102
Pentachlorethane,	$\text{CHCl}_2\text{—CCl}_3$	" "	146
Perchlorethane,	$\text{CCl}_3\text{—CCl}_3$	" "	182

—*Ibid.*, p. 390.

GLEANINGS FROM THE FOREIGN JOURNALS.

By FREDERICK B. POWER.

On the Amount of Nitrite of Ethyl in Spirit of Nitrous Ether.
By E. Kellström.—The author calls attention to the very great variability in the amount of nitrite of ethyl, as contained in different specimens of the spirit of nitrous ether, and gives the mode of procedure employed in the examination. A certain amount of the preparation is weighed in a strong bottle and digested with an alcoholic potassa solution in the water bath until the ethyl nitrite becomes fully decomposed; the solution, which now contains potassium nitrite, is evaporated on the water bath, the residue again dissolved in water, filtered, diluted with distilled water, acidulated with sulphuric acid, and titrated with a solution of permanganate of potassium.

Different specimens obtained from the pharmacies of Stockholm were found to contain 0.2 to 0.3 and 2.5 per cent., while a specimen prepared in the pharmaceutical institute of Stockholm contained 3 per cent. of ethyl nitrite. An attempt to obtain a considerably stronger preparation by means of refrigeration with ice was unsuccessful, the resulting preparation containing but 3.2 per cent.—*Pharm. Zeitung*, from *Farmaceutisk Tijdschrift*, No. 14, p. 209.

Terebinthina chia (*Chian Turpentine*). By A. Janssen of Florence.—The author having had an opportunity of obtaining through a Grecian physician an authentic specimen of Chian turpentine, collected on the island of Chios from *Pistacia terebinthus*, has considered it of interest to describe its properties and appearance, particularly as the small yield and increased demand for the drug has given rise to its falsification, and the difference between it and that exported from England being considerable. The turpentine obtained from England had the appearance of Canada balsam mixed with more or less Venice turpentine, with a decided terebinthinous odor and taste, a golden yellow color, and brightly liquid, without any observable impurities. That collected by himself had the consistence of old liquid storax, brittle and but slightly sticky when handled.

By transmitted light it is not transparent, but appears tolerably so when thin layers are held towards the light, and would then appear quite transparent were it not for the many dispersed black spots arising from small enclosed particles of the bark of the tree. The color, as observed in a mass, is brown with a greenish tint and in some pieces appears brownish-yellow. The odor is neither that of turpentine nor of fennel, as stated by some, but has much similarity to the odor developed when colophony and yellow wax are melted together; a peculiar aromatic odor must be admitted which has some resemblance to that of lemon. The taste is exceedingly mild, neither bitter nor acid. A solution in rectified spirit is not perfectly clear, gives upon standing an insignificant precipitate, and feebly reddens litmus; in ether, acetone and amylic alcohol it dissolves to form a nearly clear liquid. For internal use it is best prescribed in the form of pills, and the following formula is recommended: Terebinth. chia 4.0 grams, sulphur purat. 1.5 grams, pulv. rad. glycyrrh. q. s. ut ft. pilul. No. 30. Signa. Two pills every 4 hours.

For external use it is best employed according to the following

formula: Terebinth. chia 5.0 grams, vaselin 30.0 grams. Mix with the aid of a gentle heat.—*Pharm. Zeitung*, Oct. 23, 1880.

On the Chlorophyll of Plants. By F. Hoppe-Seyler.—From chlorophyll by means of alcohol two coloring matters may be obtained: a greenish-white in transmitted light red coloring matter, probably identical with the erythrophyll of Bougarel, which crystallizes in needles, and appears in reflected light dark-green, in transmittent light brown. The latter appears to be closely related to the chlorophyll of the living plant; its alcoholic and etherial solutions show the red fluorescence and a strong absorption between B and C, as also bands in yellow and green, which are relatively somewhat more prominent than in freshly prepared chlorophyll solutions. The crystals are permanent, and the analysis gave C 73.4, H 9.7, N 5.62, O 9.57 and P 1.37. The author calls this coloring matter *chlorophyllan*.

The chlorophyllan gives on melting it with potassa a liquid ammonium base with low atomic weight, or perhaps ammonia itself, also in the residue, besides a substance not yet more closely examined an acid of a purplish-red color, soluble in ether, which, after drying with alcohol and a little sodium carbonate solution, and extracting the residue with alcohol gives a beautiful purplish-red strongly fluorescent solution, by the evaporation of which a purplish-red body, easily soluble in water, is obtained. This sodium salt was converted into the barium salt and the latter analyzed: $(C_{21}H_{33}O_3)_2Ba$. The corresponding acid, $C_{21}H_{34}O_3$, is called by the author dichromatic acid, on account of the double fluorescence. By the evaporation of the solution, as also by the action of hydrochloric acid on the sodium and barium salts of the above acid, decomposition products were obtained, the nature of which has not yet been fully determined, although to one of them, on account of a similarity in optical behavior to the so-called *hämato porphyrin* as obtained from hämaglobin or hämatin by the action of strong acids, the name of *phylloporphyrin* has been given.

The author also observes in regard to the crystallized chlorophyll of Gautier that it appears to him to be a mixture of erythrophyll and chlorophyllan with some wax, and rejects the claims of priority of Gautier from the fact that the only notice of this body in "*Bull. Soc. Chim.*," gives neither its properties nor mode of preparation.—*Schw. Wochenschrift für Pharm.* No. 30, 1880, from *Zeitschr. für physiol. Chem.*

PHARMACOGNOSTICAL NOTES.

Strychnos ganthieriana, Pierre.—Catholic missionaries in Tong-King have directed attention to the bark of a climbing shrub called by the natives *hoang-nan*, and used in hydrophobia, against snake bites and in certain skin diseases. The bark is blackish-grey or grey-black, sometimes brownish, mostly covered with a thin ochre-yellow tissue, and always marked with longitudinal ridges. Internally, it shows a lighter and a darker colored layer, and under the microscope are seen, 1, a corky layer; 2, a layer of parenchyma with crystals of calcium oxalate; 3, a pale colored line, consisting of thick-walled stone cells filled with a brown resinous matter, and 4, a layer having double the thickness of the other three layers, and radially striate by thin-walled, roundish cells in 4 or 5 rows, and by vertically elongated cells containing starch granules; near the outer margin of the inner layer are found scattered groups of stone cells. The *hoang-nan* bark resembles the bark of *Strychnos nux vomica* (so-called false angustura), but is more regularly curved, much thinner, upon the outer surface more verrucose, and upon transverse section shows more irregular striæ and fewer stone cells.

The anatomical structure of the two barks and of that of curare of Rio negro is very similar, and in the wood of these plants are numerous large pores visible upon the surface, and having upon transverse section an ellipsoid shape.

Hoang-nan bark contains strychnia and brucia, and is given in doses of about .02 gram ($\frac{1}{2}$ grain). A decoction, tincture and extract of the bark have been recommended. — *Burkhard Raeber*, in *Schweiz. Wochenschr. f. Phar.*, July 16.

Strychnos triplinervia, Mart.—According to Ladislao Metto, this Brazilian plant is distinguished from *Str. castelnæa* and *Str. toxifera* by being tree-like and not climbing, having smooth oval triplinerved leaves and the numerous flowers in cymes. The extracts obtained from different parts of this plant by different methods varied considerably in color; that from the root was rich in gum resin, easily emulsified and almost without activity; but the extracts of the stem- and root-bark resembled curare in their action, and were most active if obtained from bark of medium thickness. Although weaker than curare, which is prepared from several plants, it deserves attention. — *Zeitschr. Oester. Apoth. Ver.*, 1880, p. 428, from *Jour. Phar. et Chim.*

The presence of nicotia in Indian hemp was asserted by Preobraschensky in 1878. E. L. Seezen has examined hemp leaves grown near Riga,

and proved that they are free from the alkaloid named.—*Pharm. Centralhalle*, 1878, p. 369.

Tonga is a new remedy, introduced from the Fijee Islands, and consists of a mixture of bark, leaves and fibres, which, according to Holmes, are probably derived from *Raphisodophora vitiensis*. The remedy is recommended against neuralgia, and is said to contain a volatile alkaloid, *Tongina*. A brown liquid extract of the drug has been made in London.—*Handelsbericht von Gehe & Co.*, September.

Variable Activity of Digitalis.—W. Mayer states that Niemeyer found the leaves of digitalis, grown in the black forest, to be far more active than those of plants growing in Northern Germany. The leaves should be collected during the period of flowering, and only the long-petiolate radical and lower stem-leaves should be used, but not those from the middle or upper part of the stem, which are nearly sessile. A similar observation has been made by Reusch, who found digitalis from mountainous localities much more active than that grown in plains.—*Pharm. Zeitung*.

A Poisonous Star Anise.—*Illicium religiosum*, Siebold, is regarded by many botanists as a variety of *Ill. anisatum*, Lour. The latter is indigenous to Cochin China and naturalized in China, is smaller, about eight feet high, has smaller ovate leaves, rounded at both ends, and flowers with more than thirty stamens. *Ill. religiosum* is indigenous to Japan, and the poisonous properties of its leaves and fruit were mentioned already by Siebold. The fruit has some resemblance to star anise, but the carpels are more woody, shorter and boat-shaped, have a rougher surface, are pointed at the ends and curved upwards, and have a camphoraceous or somewhat laurel-like odor and taste, not at all resembling anise. The light-colored, yellowish seeds yield by expression a fixed oil, which is used for illuminating and lubricating, is thickish, yellow or greenish-yellow, of a peculiar odor and taste, contains in the fresh state 5.9 per cent. of free fatty acids and possesses poisonous properties. 2 grams of the powdered seeds produce vomiting, and 10 grams of the oil cause in dogs violent irritation of the stomach and intestines. A preliminary examination, made by A. J. C. Geerts, revealed the absence of an alkaloid.—*Ibid.*, from *Pharm. Weekblad*.

Kola Nuts.—Attention has been recently directed by medical journals to Kola nuts, which, by the natives of Africa, are asserted to promote digestion and ward off inordinate danger, to relieve thirst, to sustain physical strength and to give endurance under prolonged exertions.

They are the seeds of *Sterculia acuminata*, *Beauv.*, a [medium sized tree, indigenous to tropical Africa. The fruit consists of five follicles, containing large, reddish or purplish seeds. An allied species, *St. tomentosa*, *Guill. et Per.*, has oval-oblong grey seeds. These, and perhaps others, are known in West Africa as *Kola nuts*, and in Soudan as *guru nuts*. Bentley (Botany) gives the following account: They are largely used in various parts of Africa as food and medicine, and are also commonly stated to be employed to sweeten water, which has become more or less putrid. Their use, however, as a purifier of water is denied by Dr. Daniell. The latter writer made the interesting discovery, which was confirmed by Dr. Attfield, of the presence of theina, the alkaloid of tea, etc., in Kola nuts.

NOTES ON CHIAN TURPENTINE.

BY PROFESSOR FLÜCKIGER.

This drug has recently been in much request, as may be seen from the notes in this journal, which have been devoted to this turpentine.

It is not at all probable that a good and regular supply of it could be obtained from Chio. The island, on the whole, has never produced it largely, as already stated in the "Pharmacographia," 2d edition, p. 166.

Pistacia terebinthus being distributed over a very wide area, could well be laid under contribution from other countries. The best plan would perhaps be to go to Algeria. In the Algerian forests the terebinth may be found very frequently, either mixed with oaks and lentisks, or even in clumps in small woods. The trees grow to the height of 50 feet and to more than 6 feet in circumference and attain a very great age. I was surprised some time ago to learn the following statements in regard to the turpentine, which I will translate literally from the "Flore forestière," 3d edition, 1877, p. 72, written by a very competent observer, viz., Mr. A. Mathieu, conservator of forests, and professor in the French School of Forests at Nancy.

"Tears of a white and very fragrant turpentine exude from the bark of *Pistacia terebinthus*; in the hot season they are flowing out in such an abundance that it becomes difficult sometimes to enjoy the shade of the tree. The tears soon solidify. The resin is then termed in Algeria 'lek' or 'alk,' meaning lacker. It is very similar to the 'mastick' of Scio or Chio."

A large terebinth tree will yield 7 to 14 ounces annually.

Mathieu's statement as to the rapid hardening of this turpentine is quite in accordance with the description given in the "Pharmacographia." It may fairly be presumed that the Algerian resin is identical with that originally collected in the island of Chio.

The authors of the "Pharmacographia" are of the opinion that another kind of terebinth, "*Pistacia atlantica*," Desfontaines, growing to a large size all over Northern Africa, is but a variety of *Pistacia terebinthus*, but Mathieu considers them to be distinct trees. However this may be, he further says that *Pistacia atlantica* also affords an abundance of the same turpentine as the genuine *Pistacia terebinthus*. We may further suppose that the supply of products under notice might be largely increased by systematically puncturing the bark.

There is thus a possibility of procuring any quantity of Chio turpentine at a moderate rate, in order to enable the medical profession to settle the question as to the real merits of this old drug, which is singularly again claiming a position in the modern materia medica.—*Pharm. Jour. and Trans.*, October 16, 1880.

CHEMICAL NOTES.

BY PROF. SAMUEL P. SADTLER, PH.D.

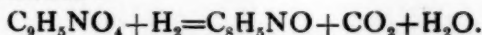
Inorganic Chemistry.—*Separation and Determination of Arsenic.*—Emil Fischer finds that the method proposed simultaneously by Schneider and Fyfe for the separation of arsenic in toxicological examinations by distillation as trichloride is not generally used for the reason that in the ordinary cases the arsenic is gotten as arsenic acid, which is not affected without previous reduction. He finds, moreover, that ferrous chloride is a reagent specially adapted for this reduction, so that the arsenic can be readily converted into arsenious acid and then distilled as trichloride. Thus, by distillation with hydrochloric acid and ferrous chloride, the arsenic is quickly and completely converted into volatile trichloride, while all the other metals of the sulphuretted hydrogen group, including antimony and tin, remain behind in the liquid with the iron. The estimation of the arsenic in the distillate may be made either gravimetrically as trisulphide, according to Bunsen, or better volumetrically, after neutralizing with potassium carbonate with iodine solution. The hydrochloric acid solution, from which the arsenic is to be distilled, may contain sulphuric acid, but not nitric acid. Metallic

alloys are therefore best dissolved in hydrochloric acid, with addition of potassium chlorate. If nitric acid had been used it must be removed beforehand completely by evaporation with excess of sulphuric acid.—*Ber. der Chem. Ges.*, xiii, p. 1778.

On the Detection and Determination of Arsenic in Organic Matter.—Chittenden and Donaldson have given Gautier's method of decomposing organic matter, when mixed with arsenic, a careful revision and have modified it somewhat. It consists essentially of successive oxidations with nitric and sulphuric acids. 100 grams of the suspected material, cut into small pieces, are treated in a casserole with 23 cc. of concentrated nitric acid and the dish heated to 100 to 160°C., with occasional stirring. In one and a-half to two hours the mass, after having been quite thick, becomes liquid, and then the heat is raised to 180°C., when it becomes thick again and of an orange shade. The casserole is then taken from the air-bath and 3 cc. of pure concentrated sulphuric acid added and the mixture well stirred. Powerful oxidation and evolution of nitrous fumes occurs, but no deflagration, and the carbonization is effected without the loss of any arsenic. The casserole being again heated to 180°C., 8 cc. of pure nitric acid are added drop by drop, which effects a more complete oxidation and prevents the formation of any sulphurous acid and consequent production of insoluble arsenious sulphide. On heating now to 200°C. for fifteen minutes a hard carbonaceous residue is the result, free from any nitric acid. In this the arsenic exists readily soluble in water. After extraction with boiling water the reddish-brown fluid is evaporated to dryness on the water-bath, the residue being gotten in one casserole. This residue of arsenic, with a little organic matter, is then dissolved in a definite quantity of dilute sulphuric acid and introduced into the Marsh apparatus. The analytical results quoted show the great accuracy of the method.—*Am. Chem. Journ.*, ii, p. 235.

Organic Chemistry.—Synthesis of Indigo.—Although it was announced some years ago that the artificial formation of indigo had been effected, yet the process was so expensive and the yield obtained so trifling that no importance attached to the announcement. Prof. Bæyer of Munich, who made the previous synthesis, has, however, succeeded now in effecting the synthesis in a more direct way, and with a yield almost, if not quite, corresponding to the amount calculated from the material taken. He has, therefore, patented two processes, the general outlines of which are now made public. The starting point of

both of them is cinnamic acid (contained in storax and in Peru and tolu balsams), or rather its derivative, nitro-cinnamic acid, and of this the ortho variety only. This ortho-nitro-cinnamic acid, $C_6H_4(NO_2).C_3H_3O_2$, according to the first procedure, is treated with bromine, yielding $C_6H_4(NO_2)C_3H_3Br_2O_2$; this treated with boiling alcoholic potash solution loses $2HBr$ and yields $C_6H_4(NO_2).C_3HO_2$. This compound, orthonitrophenylpropionic acid by name, when treated by an alkali and reducing agent simultaneously, yields indigo blue according to the following reaction :



Bayer recommends the use of a mixture of glucose and an alkaline carbonate. The reaction takes place very readily at $110^\circ C.$, indigotine separating out in the crystalline form. According to the second process the nitro-cinnamic acid is treated with hypochlorous acid, yielding $C_6H_4(NO_2)C_3H_4ClO_3$ with elimination of H_2O and HCl . This compound, treated with boiling caustic alkalies, yields $C_6H_4(NO_2)C_3H_3O_3$. The simple application of heat ($110^\circ C.$) decomposes this compound orthonitrophenyloxyacrylic acid, yielding indigotine, C_8H_5NO . Bayer prefers, however, the first process, as giving the largest yield and as, moreover, offering the advantage of having the indigo blue produced right in the fibre. Thus, if a textile fibre be impregnated with a mixture of the nitrophenylpropionic acid and the glucose and alkaline salt, and then exposed to a current of superheated steam at $110^\circ C.$, the indigo is produced at once in the fibre. Farther details as to relative cost of production and yield possible will be awaited with great interest. — *Annales de Chim. et de Phys.*, October, 1880, p. 286.

On a New Hydrocarbon from Coal Tar, called Picene.—O. Burg has extracted from the last products of the distillation of coaltar pitch a new hydrocarbon, to which he gives the name picene. When purified by crystallization from boiling cumol it was gotten in the form of white scales, showing a blue fluorescence. An analysis established for it the formula $C_{22}H_{14}$. It is insoluble in most solvents, dissolving only in slight amount in boiling glacial acetic acid, benzol and chloroform. Its best solvent is that portion of the light oil of coal tar boiling at 150 to $170^\circ C.$ Its fusing point is $345^\circ C.$, the highest fusing point of any known hydrocarbon. Burg prepared also its quinone, called picequinone, $C_{22}H_{12}O_2$, and the bromine derivative $C_{22}H_{12}Br_2$.

Picene forms a new member of the series of hydrocarbons, which commences with benzol, C_6H_6 , and which includes naphthalene $C_{10}H_8$,

anthracene, $C_{14}H_{10}$, chrysene, $C_{18}H_{12}$ and picene, $C_{22}H_{14}$.—*Ber. der Chem. Ges.*, xiii, p. 1834.

On the Nature of Caucasian Petroleum.—The Russian chemists Beilstein and Kurbatow have made a chemical study of the petroleum now produced in such large amounts in the Caucasus. It had been observed that the Russian oils of the same boiling point as American petroleum had a much higher specific gravity, and that so far from this impairing their burning qualities, they yield a light-giving power 10 per cent. higher than the American oils. This higher specific gravity, moreover, made it possible to obtain from the Russian oils lubricating oils of the best quality (even up to 0.940 specific gravity) without the admixture of any solid materials. The Russian chemists directed their study especially to the more volatile portions of the crude oil. Thus the fraction boiling under $80^{\circ}C$. was found to have a specific gravity of 0.717, while hexane, the paraffin hydrocarbon of the same boiling point, has a specific gravity of 0.669; the fraction between 95 to $100^{\circ}C$. had a specific gravity of 0.748, while heptane has a specific gravity of .699. The first supposition of the investigators was that the Russian oils were mixtures of the paraffin series and the aromatic or benzol series. However, they could not find a trace of the benzol series in any of the fractions. An analysis of the 80 to $85^{\circ}C$. fraction gave results corresponding, not with the formula C_7H_{16} , but C_7H_{14} . The hydrocarbons of the Russian oil are not, however, members of the olefine series, C_nH_{2n} , as bromine has no action upon them, except in the way of substitution. They are the hydrogen addition products of the benzol series of hydrocarbons. Wreden had studied these and found for

Hexahydrobenzol,	C_6H_{12}	0.76 sp. gr.	$69^{\circ}C$. boiling point.
Hexahydrotoluol,	C_7H_{14}	0.772	$97^{\circ}C$.
Hexahydroisoxylol,	C_8H_{16}	0.777	$118^{\circ}C$.

Beilstein and Kurbatow substantiated this view of the composition of the oil by preparing derivatives like trinitroisoxylol, identical with that prepared from metaxylol of coal tar. Farther observations upon these Caucasian oils are promised.—*Ibid.*, p. 1818.

Differences between Petroleum Spirit and Allied Liquids.—A. H. Allen, in a paper read before the British Association at Swansea, 1880, sums up the differences between petroleum spirit, shale naphtha and coal-tar naphtha, as follows:

	Petroleum spirit.	Shale naphtha.	Coal-tar naphtha and benzol.
1. Leading constituents,	Heptane, C_7H_{16} , its homologues.	Heptylene, C_7H_{14} , its homologues.	Benzin, C_6H_6 , its homologues.
2. Sp. gr. of sample at $15.5^\circ C.$,	0.690	0.718	0.876
3. Boil point of sample,	$55^\circ C.$	$56^\circ C.$	$80^\circ C.$
4. Solvent action of sample on coal-tar pitch,	Very slight solvent action. Liquor only amber-yellow after prolonged contact.	Behaves similarly to petroleum spirit.	Readily dissolves pitch, forming deep brown solution.
5. Behavior of sample on agitating 3 parts of it (cold) with 1 part of fused crystals of absolute carbolic acid (Calvert's).			
	No apparent solution! The liquids are not miscible.	The liquids form a homogeneous mixture.	The liquids form a homogeneous mixture.

—*Chem. News*, Oct. 15, 1880, p. 189.

Technical Chemistry.—*Recent improvements in the Manufacture of Coal-tar Colors.*—Prof. J. W. Mallet, in a recent review of the development of the coloring industry, makes the following statements: In regard to the original so-called anilin colors, one of the most important changes has been the application on the great scale of Coupier's process, or a modification of it, for making analin red (rosanilin salts) without the use of arsenic. This process, consisting essentially in heating together, in the presence of an acid, nitro-benzin and commercial anilin oil of high boiling point, rich in toluidin, has been adopted by several of the largest manufacturers. The important researches of E. and O. Fischer, Rosenstiehl, and Dale and Schorlemmer, have proved that under the name rosanilin have been included both isomeric and homologous bases of generally similar character, and Dale and Schorlemmer have shown that of these para-rostanilin with the formula $C_{19}H_{17}N_3$ (identical with that made from para-toluidin) may be prepared from phenol, by converting this into aurin, $C_{10}H_{14}O_3$, and heating the latter with an excess of aqueous ammonia; while, if aurin be heated with anilin, the final product is tri-phenyl para-rostanilin, thus establishing full connection between phenol and the whole series of anilin colors.

The original anilin violet of Hofmann, obtained by the methylation of pre-formed rosanilin salts, has been to a large extent replaced by the "violet de Paris," made by first heating anilin under pressure with methyl chloride or methylic alcohol and hydrochloric acid, thus obtaining methylated anilin derivatives, and then oxidizing such product by heating it in the air, mixed with sand and a salt of one of the heavy

metals, usually cupric nitrate, to facilitate the oxidation process. The finest phenylated blues are now made by heating together very pure rosanilin (made by Coupier's process) and a large excess of pure anilin and benzoic or stearic acid, preferably the former. Anilin green, *vert lumière*, is now made by heating methyl salts with methyl anilin violet, thus dispensing with the costly use of iodine. But methyl green has itself been largely replaced of late by *malachite green*, made by the action of benzoyl tri-chloride on dimethyl anilin, the color so obtained exhibiting superior stability in comparison with the methyl and iodine greens.

The beautiful resorcine derivative eosine is of comparatively recent introduction, and has established its claim to be considered a valuable addition to the resources of the dyer. The phthaleins of phenol, resorcine, and other phenolic substances, have of late been converted into eosine and analogous coloring matter by using instead of bromine itself a mixture of a bromide and bromate (or corresponding chlorine or iodine compounds) with acetic acid or some other weak acid; and alkaline hypochlorates have also been employed to thus modify the preparation of aureosine and other colors of the eosine class, whose beauty is, unfortunately, not equalled by their permanence. The tri atomic phenol pyrogallol has given rise to the dyes "galleine" and "coeruleine."

It is needless to say that artificial alizarin from anthracene has within ten years replaced, to an immense extent, the natural madder, and become recognized in the very front rank of artificial coloring materials.—*Am. Chem. Jour.*, ii, p. 263.

SOME FACTS CONCERNING THE MORPHIA AND OPIUM TRADE IN THE UNITED STATES.

BY R. F. FAIRTHORNE, PH.G.

When man lost his claim to innocent perfection by his disobedience to the divine command he obtained possession of the knowledge of two great powers, namely, of good and evil. These, through various agencies, he has employed ever since. His acquaintance with the effects of opium may be considered one of these agents and reckoned as an inheritance, for which in the present day he may be thankful or

not, according to the use made of it, whether beneficially applied for the alleviation of suffering, or used in such a manner as to be a bane and a curse enervating the faculties of both body and mind.

The most potent constituent of opium, morphia, was discovered by the German apothecary Sertürner, in 1816. Ludwig had observed a crystalline deposit from strong solutions of opium as early as 1688, which was probably meconate of morphia, which he named *Magisterium opii*; but to Sertürner certainly belongs the credit of determining its character as a vegetable basic compound—the first active principle separated of this nature.

Within fifteen years of the date first named, George B. Brown and G. D. Rosengarten, chemists, of Philadelphia, began the manufacture of morphia, and supplied the druggists of this and other cities of the United States with it, and so quickly did its use become popular Mr. Rosengarten informed me that he estimated his production of it during the first three years at 5,000 ounces a year. Previous to its introduction to the trade, black drop and McMunn's elixir of opium were extensively used, which, on account of their freedom from narcotina, were not bad substitutes.

Mr. Samuel F. Troth, an old and esteemed citizen of Philadelphia, whose connection with the drug business began in 1816, gave me several interesting details concerning the subject of this paper; amongst other things he states, in answer to the question whether there was any prejudice against its use at first, "I do not recollect of any prejudice against morphia at its first introduction; on the contrary, it was considered a great and valuable discovery." He also states that this article, as made by Mr. Rosengarten, did not differ very materially in appearance from that produced at present, except that it was not quite as white. Mr. Wm. Weightman (the surviving representative of the firm of Powers & Weightman), on the other hand, informs me that the morphia which they obtained from Europe about this time was by no means pure, containing a considerable amount of impurity, and was of a light brown color; so that, judging from what I have heard from these gentlemen and others engaged in the retail business even at this early period, these firms manifested that progressiveness and excellence in character of their products, for which they have been noted ever since.

I have endeavored to ascertain the price of morphia at this time,

but have not been able to do so. In 1831, however, Mr. Troth bought some of the acetate at \$8.50 an ounce, and the next year he purchased 18 ounces, at an average price of \$7.80 an ounce. In 1841 he obtained some at \$2.52 an ounce, and quinia at \$2.50. Through Mr. Weightman I am enabled to furnish the price of sulphate of morphia for each year from 1848 to 1872, inclusive. The price per ounce averaged :

In 1848,	\$3.08	In 1857,	\$4.25	In 1865,	\$8.75
1849,	3.00	1858,	4.37	1866,	7.84
1850,	3.50	1859,	4.85	1867,	6.87
1851,	3.08	1860,	5.00	1868,	8.26
1852,	3.37	1861,	4.50	1869,	10.98
1853,	3.06	1862,	4.75	1870,	8.87
1854,	3.62	1863,	7.00	1871,	6.18
1855,	4.12	1864,	9.20	1872,	5.37
1856,	4.34				

During the year 1868 the price of opium in bond (gold value) gradually rose from \$4.75, in July, to \$11 a pound, in December, the duty on the same being \$2.50 a pound, and in January, 1869, it brought \$12.50 in bond.

It has been impossible for me to find out how much morphia is now made and used in the United States, but I have reason to fear that the amount is very large. One manufacturer estimates the average annually bought by the retail druggists at about 2½ ounces each. This coincides with my own experience after a long connection with the retail business, and, as there are now about 25,000 druggists in the United States, the amount annually consumed would be 62,500 ounces.

Another large manufacturer estimates that about 25 per cent. of Turkish opium that comes to this country is used in the production of morphia salts. During the year ending June 4th, 1880, there were 2,480 cases of opium (Smyrna) imported. The average weight of each case is about 150 pounds, making a total of 372,000 pounds. Twenty-five per cent. of this would be 93,000 pounds.

If we place the yield of morphia in dry opium at 10 per cent., we shall arrive at the following result: Opium loses by drying about 20 per cent., therefore 93,000 pounds would be reduced to 74,400 pounds by loss of water, and would yield 7,440 pounds of morphia, or 119,040 ounces, a fearfully large amount, one that I sincerely hope and believe

is an over-estimate. I fear, however, that the quantity produced cannot be less than 65,000 ounces annually during the past three years. The consumption of this amount is appalling enough without considering the use made of the remaining 279,000 pounds of opium. The value of 65,000 ounces of morphia, at \$5 an ounce, would be \$325,000. This is, perhaps, calculated at too high a figure, but it cannot be far from \$300,000.

It will not, perhaps, be out of place here to state the amount of opium received in the United States at various periods; it was:

In 1859, 71,839 lbs.	In 1877, 230,102 lbs.
1860, 135,000 (estimated)	1878, 207,752
1867, 135,105	1879, 278,554
1876, 228,742	1880, 372,000 (estimated)

During the year ending June the 4th last, the following amounts of Smyrna opium were sent:

To the United States, . . .	2,480 cases, or 372,000 pounds
Holland,	293 43,950
England,	791 118,650
France,	47 7,050
Spain,	120 18,000
Italy,	12 1,800
Germany,	85 12,750
China,	246 36,900
Making a total of . . .	4,074 611,100

Why so much larger quantity is consumed in this country than in Europe it would be difficult to determine. The greater number of persons suffering here with neuralgic troubles cannot possibly account for it. Nearly five-eighths of the whole Turkish crop is used by us. It is time that every physician and druggist should use his utmost efforts to restrain the improper use of opium. Undeserving, indeed, is he of the name of good citizen who carelessly dispenses these or other pernicious drugs for the sake of paltry gain.

If these figures of the consumption of opium are startling, what will be thought of the amount sent to China of Indian opium, namely, 91,200 cases during the year 1879, the value of which was £12,993,979. What a fearful responsibility rests upon those who encourage and foster such a nefarious trade!

NOTE ON INDIAN HENBANE.

BY THOS. GREENISH. F.C.S., F.R.M.S.

Among the samples of interesting drugs which reach the Museum of the Pharmaceutical Society, either through its honorary and corresponding members or other scientific men, the products of India, our own colonies or those of other countries there is an ample field for scientific research, and one in which the youth of our profession may serve the cause of pharmacy, and at the same time earn distinction for themselves.

It is, from every point of view, desirable that the numerous vegetable products of tropical and other countries, introduced as remedial agents, should, as early as may be convenient, be thoroughly examined, and if there be present in any one of them an active proximate principle or residual agent that it may be recognized as an aid to therapeutic science; or, on the contrary, if possessing only some astringent or other less valuable constituent, it may be relegated to its proper place as an addition to a class of bodies of which we at present possess so ample a store.

It is sometimes difficult to determine whether it be a loss to therapeutics or a gain to true pharmacy; but, nevertheless, there is the fact, and it is daily exemplified, that the more plentiful supply of the raw material sends a large number of new therapeutic agents into the list of forgotten or neglected remedies.

The official biennial henbane leaf has of late years become very scarce in this country, and it was with considerable interest that, at the request of Mr. Holmes, I undertook the examination of a small sample of henbane leaf sent from India. It arrived in a tin box, without any particulars as to its being the produce of the annual or biennial plant, place of growth, character of soil, the result of cultivation or otherwise. The quantity at my disposal was only $3\frac{1}{2}$ drachms. On removal from the tin the leaves had a clammy feel; they possessed an intense odor, on the hand very persistent, and generally stronger than that of any henbane that had previously come under my notice.

With so small a quantity of leaf the tincture seemed the most suitable official preparation to make. For this purpose it was placed in a drying-closet at a temperature of about 80°F. , and with a loss of 14 grams or 7 per cent. was reduced to a coarse powder, as directed in the Pharmacopœia. It was remarked how quickly and almost entirely the

peculiar odor of the henbane, just referred to, passed off in the process of drying.

The tincture was prepared by maceration, and after standing the usual time, pressed off and filtered. Compared with the official tincture of the British Pharmacopœia, made with biennial henbane, by transmitted light it was brown-olive, whereas the official tincture is olive-green, and the color more intense. A little of the tincture of Indian henbane added to water produced no opalescence, and gave only a tinge of color; the official tincture, on the contrary, produced considerable opacity, which, on the addition of a little liquor potassæ, disappeared.

In the general structure of the leaf I could perceive no very material difference, but a section of the midrib showed much more vascular structure than one from the same part of indigenous biennial henbane; but more extended observation will be required on the histology of the two plants before any definite conclusion can be arrived at as to their identity.

Extracts made from the two tinctures were relatively 3.43 for the Indian henbane, as compared with 4.20 for the British Pharmacopœia; but on this point also further experiment, and with larger quantities, is desirable.

As regards the difference in color, it is probable that under a tropical sun one of the elements of the chlorophyll of the Indian henbane had been in part decomposed, and hence the brown of that tincture as compared with the green of the official. The two samples also were respectively viewed in the spectroscope, when the Indian tincture showed an absorption band in the red, smaller, and not so clearly defined as that of the tincture from the indigenous biennial. This would also indicate a loss of chlorophyll as just referred to. The relative difference in the yield of extract of the two tinctures may receive its solution in the greater vascular development of the Indian as compared with the indigenous leaf. The quantity of tincture was too small for reliable conclusions as to any difference in the therapeutic value of the two tinctures. That question must be left to a larger supply of material for its solution.

Pereira, quoting Mr. Houlter, states, in reference to indigenous biennial henbane, that "when fresh it has a strong, unpleasant and narcotic odor, a mucilaginous, slightly acid taste, and a clammy feel; and that by drying it almost wholly loses these properties." Reference has

already been made to the more intense odor of the Indian henbane, and it may therefore be worth while to determine on a small quantity of a given sample the amount of loss suffered in the process of drying, and allowing for that loss to make a tincture with the leaf without previously drying it, so that the strong odor which is probably due to some volatile principle, and also the acidity, may together be retained, and probably increase the therapeutic value of the product.

It is to be wished that a larger supply of this henbane leaf, with full particulars on those points of its history previously referred to, may reach this country for the institution of more exact experiments to determine the relative value of the two henbanes; but these references may serve to turn attention to another probable source for an official plant now, and for some years past, very scarce in this country.

I am inclined to think that the Indian henbane, from its very intense odor, probably the result of climatic influences, may supply a therapeutic agent more volatile than any one of the official preparations from indigenous henbane.—*Pharm. Journ. and Trans.*, Sept. 25, 1880.

THE ALKALOIDS OF DITA BARK.¹

BY O. HESSE.

Apothecary Gruppe, of Manilla, prepared from dita bark, the bark of *Alstonia scholaris* (syn. *Echites scholaris*), a substance that he named "ditain," which he represented to be obtained in the same way as quinia is from cinchona bark. This alleged method of preparation appears to have given rise to the idea with some that this ditain was a peculiar vegetable base, notwithstanding that from the communications of Hildwein ("Pharm. Central.," 1873, No. 26; "Neues Repert.," xxii, p. 561) and Gorup-Besanez ("Annalen der Chemie," clxxvi, p. 88) it became evident that the preparation in question was nothing but an extract. However, Gorup-Besanez separated from 30 grams of ditain, according to Stas' method, a very small quantity of a strong non-volatile and crystallizable alkaloid, though this was not sufficient for further examination. (See also "Am. Jonr. Phar.," 1873, p. 316; 1876, pp. 221 and 369.)

Before, however, Gorup-Besanez directed the attention of chemists to ditain, Julius Jobst and the author undertook an examination of dita bark itself. This investigation led to the discovery of an alkaloid pre-

¹Abstract of a paper in the "Annalen der Chemie," vol. cciii, p. 144.

cipitable from solutions of its salts by ammonia, which they named "ditamine," and another substance presenting much similarity to the alkaloids, inasmuch as it formed a compound with oxalic acid, but differing in that it did not pass into ether and similar solvents when treated with an excess of ammonia. Other attempts made to isolate this substance were unsuccessful, and the naming of it was deferred until further experiment should disclose its nature.

Meanwhile, dita bark, as appears from a later paper by Harnack (*"Archiv f. exp. Path. u. Pharmacologie,"* viii, p. 126), was worked upon by E. Merck, who succeeded in preparing from it a crystallizable base, which, in 1876, he showed at the Exhibition of Scientific Apparatus, at South Kensington. Harnack examined this substance, which Merck considered to be pure ditamine,¹ and found that in the supposed ditamine there was present the hydrochlorate of an active vegetable base, which, having obtained from ether in crystals, he named "crystallized ditaine." Harnack further came to the opinion, like Merck, that dita bark contained no basic substance besides this alkaloid.

Hereupon, in a paper entitled "*Historische Notiz über Ditain,"*" Husemann (*"Archiv f. Pharmacie,"* ccxii, p. 438) declared that ditaine had long before been prepared by Scharlee, and named "alstonine." This led the author of the present paper (Hesse) to make some remarks upon the subject (*"Berichte,"* xi, p. 1547), and as Harnack's investigation was then unknown to him, and Husemann in his paper had treated Grappe's and Harnack's "ditains" as identical, he thought Harnack's investigation had been carried out with dita extract. This error induced Harnack to publish an extract from his paper in the "*Journal of the German Chemical Society,"* xi, 2004, in which he stated that dita bark contained only one alkaloid, namely, "crystallized ditain," and he considered, therefore, that Hesse's communication, according to which dita bark contained two alkaloids, ditamine and echitamine, was due to imperfect observation.

In the present paper, therefore, Hesse describes exhaustively these two alkaloids, together with a third, "echitenine." The last-named has been known to him some time, but a communication respecting it has been delayed until it was ascertained whether this alkaloid was actually contained in the bark, or was first formed during the preparation of the other two.

¹ Merck at first designated this substance "dittamine," but appears subsequently to have chosen for it the name of "ditaine."

Ditamine.—Ditamine is very easily prepared by the process described by Jobst and Hesse ("Pharm. Journ." [3], vol. ii, p. 144), which consists, after a preliminary treatment of the bark with petroleum spirit, in supersaturating an alcoholic extract of dita bark with soda, shaking out the alkaloid with ether, and obtaining it from the ethereal solution in the usual way. If ammonia be used instead of soda more or less of other substances separate with it, which, passing also into the ethereal solution, render the obtaining of the ditamine in a pure state much more difficult.

From the solution supersaturated with soda it is difficult to remove the last traces of ditamine by means of ether, and light petroleum spirit does not act more favorably, notwithstanding that it separates somewhat better from the basic solution.

¶ The amount of ditamine in dita bark was estimated in a subsequent experiment at 0.04 per cent. In that case the powdered bark, without previous treatment with petroleum spirit, was extracted directly with hot alcohol, and the extract obtained upon the evaporation of the alcohol was treated with dilute acetic acid in order to bring as much as possible of the alkaloid retained by the resinous bodies into solution. The clear filtered solution was then supersaturated with soda, shaken with ether, and the ethereal solution treated with a small quantity of acetic acid. After the acetic solution had been separated from the ether it was saturated with ammonia in excess, and the precipitated alkaloid shaken out with pure ether, which, upon evaporation, left it as a yellowish varnish.

According to these results it might have been expected that from 10 kilograms of dita bark 4 grams of ditamine would be obtained. But the process followed was that first described, and only 0.4 gram of alkaloid was obtained. About nine-tenths of the alkaloid had disappeared in the process, and probably was contained in the before-mentioned resinous mass. With the small quantity of ditamine thus obtained all the statements respecting this alkaloid previously put forward by Jobst and the author were confirmed.

Ditamine dissolves very readily in dilute acetic or hydrochloric acid, as well as in dilute acids generally, and from such solutions it is precipitated by excess of ammonia in white amorphous flocks. In this it is distinguishable from echitamine, the alkaloid next described, which is not precipitated from its saline solutions by ammonia. The two alkaloids present another difference, not easily mistaken. If to a con-

centrated acetic solution of ditamine a few drops of strong hydrochloric acid be added it remains perfectly clear, whilst in a similar solution of echitamine a dense crystalline precipitate is soon formed, the commencement of which is promoted by stirring the liquid with a glass rod.

The small quantity of ditamine at the author's disposal did not allow of the composition of the free base being ascertained by analysis; but the platinum salt, obtained in light yellow amorphous flocks by precipitating an aqueous hydrochloric solution with platinum solution, gave figures corresponding with the formula $(C_{16}H_{19}NO_2, HCl)_2 + PtCl_4$. The free alkaloid would therefore have the formula $C_{16}H_{19}NO_2$.

Echitamine.—After the ditamine has been, in the way described, removed as entirely as possible, the remaining solution is neutralized with acetic or sulphuric acid, and carefully evaporated until it equals one-fifteenth to one-twentieth the weight of the bark used. To the solution, whilst still warm, some hydrochloric acid and chloride of sodium is added, which produces a resinous precipitate that soon becomes crystalline. The addition of sodium chloride is continued until it is observed that the precipitated resin no longer alters its form upon standing. After 24 hours the precipitate is collected, washed with concentrated hydrochloric acid and purified by crystallization from boiling water. As hydrochlorate of echitamine is almost insoluble in concentrated hydrochloric acid, the crystallization from water, which, as a rule, is rather slow, may be hastened by adding hydrochloric acid to the solution. The hydrochlorate is then thrown down as a white crystalline powder.

Echitamine may also be prepared by adding fused potash to the before-mentioned basic aqueous solution that remains after the removal of the ditamine and shaking with chloroform. The chloroform takes up the alkaloid present, which is partly suspended and partly in solution, and gives it upon evaporation as an amorphous residue, which, upon treatment with a little concentrated hydrochloric acid, very easily yields the hydrochlorate pure.

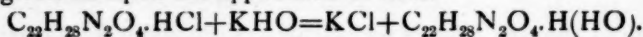
From the pure salt the free alkaloid can easily be obtained by dissolving it in the smallest possible quantity of hot water, adding to the solution saturated solution of potash, or preferably fused potash, and shaking out the free base, which separates in white flocks, with ether or chloroform. In either case there remains after slow evaporation an amorphous residue, which, upon drying in the exsiccator, at first shrivels up and then cracks. Only in very exceptional cases does this

residue show here and there indications of crystallization. Upon dissolving this residue in strong alcohol, or in a mixture of equal parts of acetone and water, the pure base is obtained upon spontaneous evaporation of the solution in a chamber free from carbonic acid in thick obliquely truncated glassy prisms.

An analysis of the air-dried substance gave results corresponding with the formula $C_{22}H_{28}N_2O_4 + 4H_2O$. Upon placing the air dried crystals in an exsiccator they lost 1 molecule of water; when further dried in a partial vacuum (about 400 mm.) at $80^\circ C$. they lost 2 molecules more, and the fourth molecule was given off with difficulty, and after some time, upon raising the temperature to $105^\circ C$. Upon exposure to moist air this anhydrous substance quickly took up 1 molecule of water, again forming the compound $C_{22}H_{28}N_2O_4 + H_2O$. The same compound is obtained upon treating the residue left by the evaporation of the ethereal or chloroform solution with hot acetone. The basic mass at first swells up, and is eventually converted into a magma of delicate white amorphous flocks, which, washed with cold acetone, dried in an exsiccator and pulverized, form a white powder, having the composition of the monohydrate.

The last traces of the last molecule of water are very persistent, and can scarcely be got rid of without decomposition taking place. Moreover, the dry residue obtained at $105^\circ C$. is almost without action upon red litmus paper, whilst that containing 1 molecule of water sharply colors such paper blue. It would consequently appear that this 1 molecule of water has a special signification towards echitamine, and that by its loss a much weaker base is formed from a strong one.

This substance formed by drying at $105^\circ C$. has, however, the peculiarity that when treated with hydrochloric or other acids the original base is again formed. This recalls in some measure the formation of chloride of ammonium when hydrochloric acid and ammonia are brought together. But when chloride of ammonium is decomposed with potassium hydrate the nitrogen base splits up into ammonia and water, whilst in the case of the organic base under consideration, when it is decomposed with potassium hydrate, the water remains combined, and is only given off upon the application of heat.



Consequently, the author calls the compound with one molecule of water, $C_{22}H_{28}N_2O_4 \cdot H_2O$, "echitammoniumhydroxide," yielding echitamine by the loss of 1 molecule of water.

Echitammoniumhydroxide.—Echitammoniumhydroxide dissolves tolerably readily in water, and still more easily in alcohol, communicating to the solution a strongly basic reaction. It dissolves when freshly precipitated rather easily in chloroform and ether, but is very slightly soluble in coal benzin and nearly insoluble in petroleum spirit. When the alkaloid has assumed the crystalline form it dissolves with difficulty in ether. Both the ethereal and the chloroform solutions, upon spontaneous evaporation, leave the alkaloid in the amorphous condition, though sometimes the amorphous mass shows distinct traces of crystallization.

The aqueous solution of echitammoniumhydroxide throws down from solutions of cupric chloride, ferric chloride and alum the oxyhydrates, without redissolving these precipitates. In solution of acetate of lead the solution produces a voluminous precipitate of hydrated oxide of lead, which is partially redissolved in the precipitant. Echitammoniumhydroxide also displaces the ammonia from chloride of ammonium, and sets free the alkaline hydrates from solution of sodium and potassium chlorides, echitammonium chloride being formed and separating in crystals. The sodium chloride is decomposed very quickly, but potassium chloride requires some time.

When heated quickly in capillary tubes to 206°C ., echitammoniumhydroxide melts and becomes colored through the formation of a black scum. It is optically active, rotating the beam of polarized light to the left. With sulphuric acid it is colored an intense purple-red, but the color becomes paler upon warming. Both the alkaloid and its chloride dissolve with a purple-red color in concentrated nitric acid, but after some minutes this color disappears and the solution becomes intensely green. Bromine produces in the aqueous solution of the alkaloid a yellow flocculent precipitate that dissolves upon heating. Anhydrous acetic acid dissolves the base very readily. Upon warming, the solution becomes brownish.

Echitammonium, the author thinks, is probably the most strongly basic of all the alkaloids and appears to be monovalent. It neutralizes acids completely, forming salts, some of which are crystallizable. The chloride, $\text{C}_{22}\text{H}_{29}\text{N}_2\text{O}_4\text{Cl}$ or $\text{C}_{22}\text{H}_{28}\text{N}_2\text{O}_4\cdot\text{HCl}$, is obtained in colorless shining needles upon treating an aqueous solution of the alkaloid or one of its easily soluble salts with concentrated hydrochloric acid or solution of sodium chloride. It dissolves moderately freely in hot, but with difficulty in cold water, forming sometimes in the latter

a supersaturated solution, from which the salt immediately crystallizes on the addition of a couple of drops of hydrochloric acid. It is almost insoluble in concentrated hydrochloric acid and solution of chloride of sodium. A large number of other salts, which have been prepared and examined by the author, are described in detail in the original paper. The author also describes an oxidation product, which he provisionally calls "oxyechitamine," produced when a solution of the base is allowed to evaporate while exposed to the air.

Echitenine.—Echitenine remains in the first mother-liquor after the precipitation of the echitammonium chloride. It may be obtained either by precipitating with mercuric chloride and decomposing the precipitate with sulphuretted hydrogen, etc., or by saturating the mother-liquor with soda, shaking with chloroform and evaporating, in either case manipulating so as to get the hydrochloric compound of the alkaloid in concentrated solution. This is done by simply evaporating the solution resulting from the decomposition of the mercuric salt, or in the other case dissolving the chloroform residue in concentrated hydrochloric acid. After standing some time the clear solution is filtered, supersaturated with soda solution and shaken with chloroform. The chloroform solution is then washed with water, treated with animal charcoal and finally evaporated, when the echitenine is left as a brownish residue. After perfect drying, this residue becomes very brittle and springs in brownish lamellæ from the sides of the vessel. It retains some chloroform, which is only driven off completely at a temperature of 100°C . The dry substance, when analyzed, gave results corresponding with the formula $\text{C}_{20}\text{H}_{27}\text{NO}_4$.

Echitenine forms, when pulverized, a brownish strongly bitter tasting powder, which melts at above 120°C . It dissolves with a reddish-violet color in concentrated sulphuric acid and in concentrated nitric acid with a purple color, passing quickly into green and finally into yellow. If the powder is simply exposed to the vapor of nitric acid it becomes colored an intensely blue-green.

Echitenine dissolves freely in alcohol, imparting to it an alkaline reaction. It also dissolves readily, especially when freshly precipitated, in chloroform and ether, less readily in water, and in petroleum spirit it is almost insoluble. Its solution in dilute hydrochloric acid gives a yellow flocculent precipitate upon the addition of potassium or sodium hydrate, as also does ammonia if the solution be moderately

concentrated. Even solution of soda produces a precipitate in a concentrated solution, but not in a dilute one.

Echitenine forms true salts with acids, but they are amorphous, and with few exceptions are unsuited for investigation.

In conclusion, in comparing echitammoniumhydroxide with ditamine and echitine, the other bases accompanying it in dita bark, it is at once apparent that they contain only half the proportion of nitrogen, and the author thinks that this difference may also be partially an expression of the relation which these bases show toward acids. Though differing in this respect, they appear to belong, as indicated by the nitric acid reaction, to a common group, and the author believes that they are part of a series which he represents of follows:

Ditamine,	$C_{16}H_{19}NO_2$
?	$C_{18}H_{23}NO_3$
Echitenine,	$C_{20}H_{27}NO_4$
Echitammoniumhydroxide,	$C_{22}H_{30}N_2O_5$

Echitammoniumhydroxide would therefore, according to this view, be the most perfect basic product occurring in the *Alstonia scholaris*.—*Pharm. Jour. and Trans.*, Oct. 23, 1880.

CHINESE WHITE WAX.¹

From an article in the "British Mail" on the white wax industry of China, it seems that the average annual value of this peculiar crop amounts to about £650,000. From Hankow alone upwards of £81,000 worth of this wax was exported in 1879. The Chinese white wax is a deposit found on twigs of *Ligustrum lucidum*, and caused by the puncture of an insect. It is said that in Keenchang district the plant thrives in great abundance, and in the spring of the year the twigs are covered with countless swarms of flies having the appearance of a brown film. The branches soon become covered with a white soap-like incrustation, which increases in volume till the commencement of the fall of the year, when the sprays are cut off and immersed in water which is kept boiling. "The viscid substance rises to the surface, and is skimmed off, melted, and allowed to cool in deep pans. It was accidentally discovered, that by transporting the insects from their native districts to the more vigorous one of Keating-fu, in the north of the province, their power of discharging wax was largely augmented—a

¹ From the "Gardeners' Chronicle," October 2, 1880.

property which was promptly and extensively availed of by the Szechuen traders. The period between evening and morning is chosen for conveyance, because many hours of sunlight would precipitate the hatching. This should take place only after the females have been attached to the trees. Arrived at their destination, six or more of the mothers—which are enormously prolific—are tied, wrapped in a palm leaf, to a branch of the ligustrum. A few days later the young flies are swarming on the twigs, where they fulfill their mission by the month of August; then they perish in the cauldrons, where the results are immediately collected. It is stated that this peculiar industry requires the exercise of great care and forethought.”—*Pharm. Jour. and Trans.*, October 16, 1880.

VARIETIES.

A Digestive Ferment of the Juice of the Fig-Tree.—The milky juice, which is found in small quantity in the common fig-tree, was collected in Provence in the month of April. 5 grams of the partially coagulated substance, consisting of a syrupy liquid, and a white, sticky, resinous, elastic, aromatic coagulum were mixed with 60 grams distilled water, 10 grams of moist fibrin added, and the mixture kept at a temperature of 50°. In less than 24 hours the fibrin was completely digested, leaving a small quantity of white, homogeneous residue. A further quantity of 10 grams, then 12, then 15, in all 90 grams of fibrin were added in the course of a month. Each successive quantity was completely digested in 24 hours, and each left a white residue, the composition of which has not been determined. The liquid showed no signs of fermentation or putrefaction.—*Jour. Chem. Soc.* October, 1880. *Comptes Rendus.*

Oxalic Acid in Beet Leaves.—Investigations made by A. Müller show that the fresh leaves of the sugar-beet contain 4 per cent. oxalic acid, of which one-third is in a soluble form. When it is considered how great are the quantities of these leaves eaten by cattle in countries where the beet root sugar industry is large, it behoves farmers to be on their guard, as the acid induces inflammation of the mucous coats of the stomach. The pickling of the leaves with chalk is likely to prevent this unpleasantness, the soluble acid being converted into calcium oxalate, which is insoluble in the weak acids of the stomach.—*Jour. Chem. Soc.*, October, 1880, p. 733.

Pilocarpin as an Antidote to Atropin.—Dr. Purjesz, of Buda-Pest, relates in the “*Centralbl. für Prakt. Augenheilk.*” the case of a patient, aged 19, who took, for medical purpose, a water solution of nearly two grains and a-half of sulphate of atropin. When the patient was seen by him, an hour afterwards, the symptoms of poisoning were very severe. He at once administered, by subcutaneous injection,

muriate of pilocarpin in doses of 0.4 grain every five or ten minutes; the quantity given amounted in all to 6.4 grains. The result was remarkable; the toxic symptoms gradually receded, and at the end of three hours from the time of taking the atropia the patient had quite recovered. Even the dilatation of the pupils, which had taken place to the greatest extent, had completely passed off.

Homatropia hydrobromate, prepared by Merck, of Darmstadt, has been the subject of experiments by Dr. Henry L. Schell, who reports his observations in the "Philadelphia Medical Times" of October 9th, arriving at the following conclusions:

1. Homatropin hydrobromate is not well adapted to the treatment of inflammatory or traumatic affections of the eye, on account of the conjunctival irritation it produces.

2. It is especially adapted to the production of that temporary dilatation of the pupil and paralysis of the ciliary muscle which is so often required in examining the condition of the refraction.

3. The best solution to use is one containing 16 grains to the fluidounce of distilled water. From one to five drops of such a solution may be required to produce the desired effect, according to the strength and activity of the ciliary muscle.

4. Under the influence of a full dose the pupil attains its maximum dilatation in about twenty minutes.

5. With a full dose the accommodation begins to fail in about ten minutes and is usually totally suppressed in a half-hour, although exceptional cases may require an hour. This total suppression lasts about three hours; the accommodation then gradually recovers itself, and is fully in action again at the end of from ten to thirty hours from the time of the last instillation.

6. The local action of the mydriatic is not accompanied by any unpleasant effects upon the general system.

Cheken—A New Remedy.—Dr. Henry Von Dessauer, of Valparaiso, has used cheken for some years in the treatment of a number of complaints. Thus as an inhalation he uses it in diphtheria, laryngitis, bronchitis and bronchorrhea; as an injection in certain infections of the mucous membrane, as gonorrhea, leucorrhea, cystitis, etc., while given internally, in the form of syrup or liquid extract, it is said to aid digestion, allay cough, facilitate expectoration, and stimulate the kidneys to action. It is also an astringent, and is found to be of especial service in threatened hemoptysis. Dr. von Dessauer used it with marked success in more than one hundred cases of bronchitis and phthisis. For many years he was physician to a large convent school, many of the inmates of which suffered from consumption, and hemoptysis being of constant occurrence. During the two and a-half years that he gave cheken in this establishment he had not a single death from phthisis, there were no fresh cases of hemoptysis, and many of the patients who had had repeated attacks of bleeding from the lungs recovered and gained flesh and strength in a very marked manner.—*Louisv. Med. News*, October 2d.

The Coca in Opium-Habit.—In your issue of May 29th I noticed an article, from the pen of Dr. Palmer, upon coca as a possible antidote for the opium-habit.

At that time I had under my treatment Capt. C., who was suffering from the morphia-habit. He was wounded in the left leg at the battle of Nashville during Hood's raid through Tennessee, and had it amputated at the middle third of the thigh. He contracted the morphia-habit to alleviate the intense pain, and continued it for several years. Five years ago he quit taking the drug, and abstained till last spring, when he went to Louisiana from Middle Tennessee, where his physician prescribed morphia in conjunction with quinia for the relief of malarial poisoning. The old habit soon returned with all its pristine force. When he came back I found him in the condition described above—gloomy, despondent, and threatening to commit suicide.

As soon as I read Dr. Palmer's article I determined to give the coca a fair test, and am able to report that the result was a most happy one. He has been using the coca *ad libitum* for more than a week, and now, instead of taking three grains of morphia several times a day, is entirely relieved of this habit with all its distressing effects, and is happy, hopeful and cheerful.

I hope all other physicians will try this new remedy in cases of this kind, and report through the "News" and other medical journals, as I, for one, am deeply interested in the result.—J. G. CORE, M.D., in *Louisville Med. News—Therapeutic Gazette*, July, 1880.

To Disguise Cod Liver Oil.—Dr. Peuteves, in the "France Médicale," recommends, in order to render cod liver oil tasteless, to mix a tablespoonful of it intimately with the yolk of an egg, add a few drops of essence of peppermint and half a tumbler of sugared water, so as to obtain a *lait du poule* ("Med. Press and Circular"). By this means the taste and characteristic odor of the oil is entirely covered, and the patients take it without the slightest repugnance. Besides, the oil being thus rendered miscible with water in all proportions, is in as complete state of emulsion as the fats at the moment they penetrate the chyle vessels, consequently absorption is better assured.—*Louisv. Med. News*, Oct. 9.

Digestion in Plants.—Dr. Lawson Tait has recently investigated afresh the digestive principle of plants. While he has obtained complete proof of a digestive process in cephalotus, nepenthes, dioncea and the droseraceæ, he entirely failed with sarracenia and darlingtonia. The fluid separated from the drosera binata he found to contain two substances, to which he gives the names "droserin" and "azerin." Dr. Tait confirms Sir J. D. Hooker's statement that the fluid removed from the living pitcher of nepenthes into a glass vessel does not digest. A series of experiments led him to the conclusion that the acid must resemble lactic acid, at least in its properties. The glands in the pitchers of nepenthes he states to be quite analogous to the peptic follicles of the human stomach; and when the process of digestion is conducted with albumen, the products are exactly the same as when pepsin is engaged. The results give the same reactions with reagents, especially the characteristic violet with oxide of copper and potash, and there can be no doubt that they are peptones.—*Med. and Surg. Reporter*, Nov. 13.

Coca.—Concerning this remedy, which has lately been prominently before the profession, Dr. D. H. McDonald, of Quincy, Ind., writes to the "Louisville Medical News," July 17th, 1880:

"There can be no question of the potency of coca, and in the hands of the intelligent physician much good may be expected from its use. But do take your trenchant pen and give us a slashing article against the indiscriminate use of it. You know a confirmed chewer of coca is called a coquero. Among the Spanish Americans a coquero is considered hopelessly lost, with no prospect of reformation. Look at the picture drawn by Von Tschudi: 'The inveterate coquero is known at first glance. His unsteady gait, his yellow skin, his dim and sunken eyes encircled by a purple ring, his quivering lips, and his general apathy, all bear evidence of the baneful effects of the coca juice, when taken in excess.'

"Surely this picture is enough to startle any one: but I know that some cannot be startled if there is a prospect of satisfying an appetite; therefore the need of a warning in time, to the profession as well as the masses, against the indiscriminate use of a drug which is apt to be followed by the blasted life of the coquero."

Separating Wheat from Chaff.—Mr. Humpidge contributes, in London "Nature," a very timely *résumé* of the present state of our knowledge by the array of new (?) elements, the announcements of which were lately heralded to the chemical world with such startling rapidity that the question of their genuineness has since been involved in much doubt. We condense in the following his conclusions:

Of *Davyum*, which was announced in July, 1877, by Sergius Kern, as a new metal belonging to the platinum group, the author thinks that the investigator failed to take the necessary precautions to get rid of iron and the platinum metals, or at least that he does not state the means he adopted to do so. He holds, therefore, that this alleged discovery may be safely ignored.

The numerous metals of the yttrium group that have been announced are more difficult to discriminate between, because of their close relationship.

He goes into considerable detail in analyzing the claims of these numerous announcements to recognition, and presents the present state of our knowledge of them in the following scheme, which shows their status at a glance:

	NAME.	Symbol and atomic weight.	Discoverer.
	Scandium (doubtful)	Sc = 45	Nilson.
	Yttrium	Y = 89	Bunsen and Clève.
Probably identical.	{ Phillipium	Pp = 111	Delafontaine.
	{ Unnamed metal of Soret	{ Atomic weight	Soret.
	{ Thulium	{ undetermined	Clève.
Probably identical.	{ X of Soret	{ Atomic weight	Soret.
	{ Holmium	{ undetermined	Clève.
	{ Terbium	Tr = 147	Marignac.
Probably identical.	{ Samarium (doubtful)	At. w't und't'md	Boisbaudran.
	{ Decipium (doubtful)	Dp = 159	Delafontaine.
	Y β	149.4	Marignac.
	Y α	156.7	Marignac.
	Erbium	Er	Mosander.
	Ytterbium	Yb = 172	Marignac.

(Phillipium, the unnamed metal of Soret, Thulium, X of Soret, Holmium, Samarium, Decipium, Y β , and Erbium give distinct absorptive spectra.)

Two alleged discoveries by Dr. Lawrence Smith, one of an earth unnamed, in the gadolinite of North Carolina, and another, which he alleged to be identical with the X of Soret, are not recognized by the author.

Of *Norwegium* and *Vesbium*, Mr. Humpidge says that, for the present, the chemical world must suspend judgment, since up to the present time we are without confirmation of their existence.

We are, as will be observed from the above, gradually finding our way out of the labyrinth of conflicting and duplicated discoveries which have puzzled chemists so much for the past few years, and may reasonably expect to see in the near future the wheat separated from the chaff.—*Engineering and Mining Journal*, Sept. 4.

Nettle Tea in Urticaria has been successfully used by Dr. Murrell in connection with a solution of carbolic acid (1 in 1,000), locally, and a bath twice daily consisting of sodium carbonate and water.—*The Lancet*.

Removal of Stains and Spots.—*Matter Adhering Mechanically*—Beating, brushing and currents of water, either on the upper or under side.

Gum, Sugar, Jelly, etc.—Simply washing with water at a hand heat.

Grease.—White goods, wash with soap or alkaline lyes. Colored cottons, wash with lukewarm soap lyes. Colored woollens, the same or ammonia. Silks, absorb with French chalk or fuller's earth, and dissolve away with benzin or ether.

Oil Colors, Varnish and Resins.—On white or colored linens, cottons or woollens, use rectified oil of turpentine, alcohol lye and their soap. On silks, use benzin, ether and mild soap, very cautiously.

Stearin.—In all cases, strong, pure alcohol.

Vegetable Colors, Fruit, Red Wine and Red Ink.—On white goods, sulphur fumes or chlorine water. Colored cottons and woollens, wash with lukewarm soap lye or ammonia. Silk the same, but more cautiously.

Alizarin Inks.—White goods, tartaric acid, the more concentrated the older are the spots. On colored cottons and woollens and on silks, dilute tartaric acid is applied cautiously.

Blood and Albuminoid Matters.—Steeping in lukewarm water. If pepsin or the juice of *Carica papaya* can be procured, the spots are first softened with lukewarm water, and then either of these substances is applied.

Iron Spots and Black Ink.—White goods, hot oxalic acid, dilute muriatic acid, with little fragments of tin. On fast dyed cottons and woollens, citric acid is cautiously and repeatedly applied. Silks, impossible.

Lime and Alkalies.—White goods, simple washing. Colored cottons, woollens and silks are moistened, and very dilute citric acid is applied with the finger end.

Acids, Vinegar, Sour Wine, Must, Sour Fruits.—White goods, simple washing, followed up by chlorine water if a fruit color accompanies the acid. Colored cottons, woollens and silks are very carefully moistened with dilute ammonia, with the finger end. [In case of delicate colors, it will be found preferable to make some prepared chalk into a thin paste, with water, and apply it to the spots.]

Tanning from Chestnuts, Green Walnuts, etc., or Leather.—White goods, hot

chlorine water and concentrated tartaric acid. Colored cottons, woolens and silks, apply dilute chlorine water cautiously to the spot, washing it away, and reapplying it several times.

Tar, Cart Wheel Grease, Mixtures of Fat, Rosin, Carbon and Acetic Acid.—On white goods, soap and oil of turpentine, alternating with streams of water. Colored cottons and woolens, rub in with lard, let lie, soap, let lie again, and treat alternately with oil of turpentine and water. Silks the same, more carefully, using benzoin instead of oil of turpentine.

Scorching.—White goods, rub well with linen rags dipped in chlorine water. Colored cottons, redye if possible, or in woolen raise a fresh surface. Silks, no remedy.—*Muster Zeitung für Faerberei, Druckerei, etc., from Chemical Review.*

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, November 16th, 1880.

On motion of Mr. Wm. McIntyre, Mr. Alonzo Robbins was called to the chair. The minutes of the last meeting having been read, and no corrections being made, they were approved. Professor Bedford being present, was introduced.

Dr. L. Wolff read a paper upon an improved method of *preparing substances for hypodermic medication*; the paper was listened to with much interest, and on motion was referred to the Publishing Committee. (See page 593.)

Mr. F. L. Slocum read a paper upon an *ink for writing upon glass*, a bottle thus marked was exhibited, and the paper was referred to the Publishing Committee. (See page 600.)

Mr. McCoy read a paper upon the estimation of iron in solution of ferric chloride, which was also, upon motion, referred to the Publishing Committee. (See p. 598.)

Professor Remington exhibited an apparatus designed by Mr. Addison White, Ph.G., for dividing pill masses. The cut will assist in illustrating the device. The machine consists of a walnut base, into the upper surface of which twenty five narrow brass strips are driven to the depth of $\frac{1}{4}$ inch, about $\frac{3}{8}$ inch apart. A lever is hinged to the base, and attached to the side is a graduated bar, the graduations corresponding to the spaces between the brass strips. On the other side of the base a brass rod, armed with twenty-five movable brass tongues, is adjusted, so that when these are not in use they lie flat upon the base out of the way. To use the divider the pill mass is rolled out in the usual way into a cylinder and laid upon the graduated bar resting upon the table. The bar is now elevated and the cylinder is deposited upon the raised cutters, the lever is brought down which divides the cylindrical pill mass, forcing it into the spaces; the bar carrying the tongues is now raised and the divided pill mass is quickly deposited upon the graduated bar, the whole operation taking much less time than to describe it.

Professor Remington also exhibited an *apparatus for gelatin-coating pills*, invented by Mr. Maynard, of Chicago, and performed the operation in the presence of the meeting. The neatness and adaptability of the apparatus to the purpose designed elicited the approval of all; the method of packing the pills after finishing also claimed attention for its neatness and efficiency.

Mr. J. Ellicott Shaw was invited to explain and exhibited *Burgess' portable mechan-*

ical blow-pipe. The general appearance of the blow-pipe is shown in Fig. 1, and its internal construction will be readily understood by referring to Fig. 2, which is a central vertical section. The pump cylinder is mounted on an arched stand and contains a piston having a valve opening upward. The piston is connected to the foot pedal by a forked connecting rod, and is moved by a slight and easy motion of the foot. The upper end of the pump cylinder is closed, with the exception of a valve aperture, which is covered by a valve opening upward into a cylindrical air reservoir secured to the upper end of the pump. Near the top of the air reservoir there is a nipple to which is attached a flexible tube communicating to the blow-pipe. The pipe outlet is much smaller than in the mouth blow-pipe to permit of maintaining a pressure, which may be increased or diminished by a quick or slow

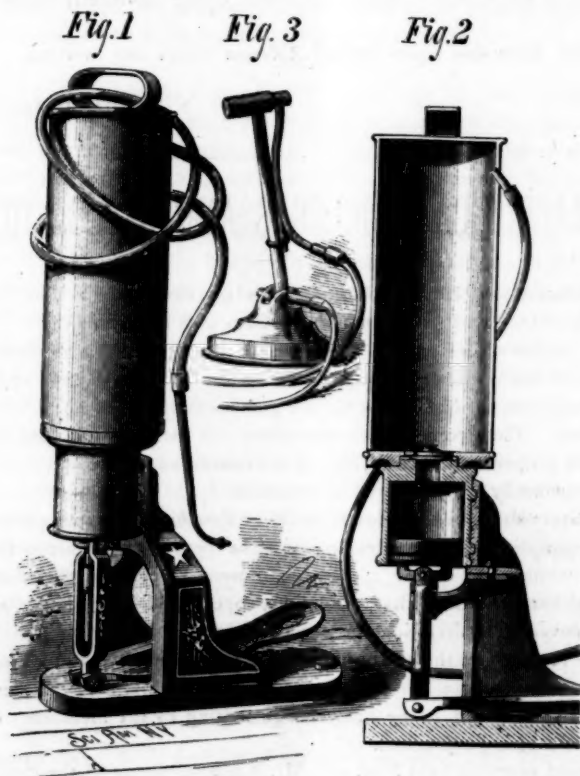


WHITE'S PILL MASS DIVIDER.

motion of the treadle. The air chamber is easily filled, and when charged affords a *constant* supply of pure air. The machine is light and portable, weighing but 12 pounds and measuring 24 inches in height. The pump cylinder is $2\frac{1}{2}$ inches in diameter, with 3 inches stroke. For light and delicate work when a gentle flame is required, a pressure of one or two pounds is given, but for brazing, annealing, fusing, etc., when a large flame is necessary, a few rapid strokes of the plunger will raise the pressure in the receiver to from 10 to 12 pounds, which can be sustained

with but little exertion. Under this pressure the air is driven through the minute opening in the blow-pipe nipple with great force. The blow-pipe may be used effectively with a gas, alcohol or oil flame, also for creating a draft in the use of charcoal or coke in connection with the small smelting furnaces now so largely in use. Fig. 3 represents a compound bench blow-pipe, which possesses a rocking motion, enabling the flame to be used in any position.

Mr. Shinn exhibited specimens of *Quebracho bark*, both dark and white, which is recommended for asthmatic affections; it is quite astringent, and is used in South America for tanning leather.



Professor Maisch exhibited a specimen of very handsome *senega root*, which he presented to the cabinet of the college; this specimen was peculiar in having very long and rather thin branches of much brighter appearance than usual. He also exhibited a specimen of a root which appears to be largely sold for *senega*; while doubtless a product of a *polygala*, it was wanting that peculiar carinated line which distinguishes the *senega* so completely from other roots, and has a central wood which, in all parts, is nearly circular upon transverse section.

Professor Maisch presented a piece of *lead pipe* which had been connected for nearly ten years with a circulating boiler in a dwelling in this city. The pipe could

be easily broken, the metal being quite granular and in numerous places forming larger and smaller cavities, which contained crystalline red oxide of lead.

Professor Remington inquired if any present had seen so-called *Quassia Cups* made from other than quassia wood; he had been informed that some had been put on the market in a Western State.

Mr. McIntyre inquired whether there was any process known for completely deodorizing *coal oil* or *benzin*. In reply, it was stated that lime was used with some effect, but did not completely remove the odor.

A very handsome sample of *neats-foot oil* was presented to the cabinet; it was stated that this oil was now a commercial article being constantly supplied to the trade.

After a short discussion upon several different topics the meeting, on motion, adjourned.

THOS. S. WIEGAND, Registrar.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Alumni Association, Philadelphia College of Pharmacy.—The first social meeting was held Oct. 12th, President Hugh Campbell in the chair.

Dr. A. W. Miller addressed the meeting on the subject of *prescriptions*, giving the derivation of the word, explaining the difference between officinal and magistral preparations, and stating the reasons for the general adoption of the Latin language in prescriptions. The lecturer then explained the various signs used in prescriptions, and their proper construction, the abbreviations and some of the Latin terms which are occasionally employed in the directions.

Mr. L. E. Sayre described the flower heads of *Pyrethrum roseum*, and made some experiments upon flies and tadpoles, to show the prompt effect upon them of the pure powder, while some of the commercial insect powders were not at all efficacious. Dr. Miller remarked that the microscope would most likely be the best means for discovering adulterations in insect powder.

After some remarks on the arrangement of a collection of *materia medica* specimens for the use of students, one question each in *materia medica*, chemistry and pharmacy was announced to be answered in writing by the members of the class, after which the meeting adjourned.

At the second meeting, held Nov. 9th, Mr. Krewson occupied the chair, and Mr. Cook delivered a discourse on natural orders of plants, their limits and systematic arrangement. Dr. Miller illustrated and explained the symbols that were in use by the alchemists, after which the report of the delegates from the Alumni Association to the meeting of the American Pharmaceutical Association at Saratoga was read, and some remarks made by Dr. Miller on the numerous mineral springs of that watering place, and on some of the most interesting features of the exhibition which was held during the meeting of the National Association. A number of specimens were shown, and several questions propounded to the members of the class. The meeting then adjourned.

EDITORIAL DEPARTMENT.

The General Index for the last ten volumes of the "American Journal of Pharmacy" is nearly ready in manuscript; but we find that, if we would adhere to our intention of issuing it with the December number, it would delay the appearance of the latter too long. For this reason, it will be mailed with the next issue, in January, to all subscribers. We embrace this occasion of expressing our thanks to our friends, readers as well as contributors, hoping that they will continue such in the future, and extend the influence of the JOURNAL by contributions to its pages, as well as by calling to it the attention of those interested.

The End of Two Bogus Colleges.—On page 527 of the present volume we have given, as a matter of history, the legal proceedings that put an end to the existence of two chartered institutions, which, from the manner they were conducted, were discreditable to the colleges of the United States. We now can inform our readers that on Nov. 12th Dr. John Buchanan pleaded guilty to two indictments charging the sale of an academic degree. Sentence was deferred.

On Nov. 24th the same Dr. Buchanan and M. V. Chapman, in the United States District Court, were found guilty of conspiring to defraud the United States out of \$5,000, the amount of Buchanan's bail. The statute imposes a fine of not less than \$1,000 nor more than \$10,000, and an imprisonment of two years. In this case sentence has also been deferred, and the principal is soon to expect another trial on the charge of using the mail for fraudulent purposes.

The Thalleioquin Test.—Referring to Mr. Zeller's paper on this subject, on page 385 of this volume, Mr. J. Denham Smith writes to the "Chemical News" that the discoverer of this test was H. A. Meeson, whose communication, dated "Guy's Hospital, Jan. 7, 1835," was published in the "Philosophical Magazine and Journal of Science" for that year.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Druggists' Pocket Price Book for Wholesalers, Retailers and Traveling Salesmen. Cleveland, O.: John H. Nelson. 1880.

On page 432 of our last volume we noticed Mr. Nelson's druggists' cost-book. The book before us is gotten up essentially on the plan then described, but its smaller size, and some modifications in the internal arrangement, render it, we think, more convenient for use.

The Physician's Visiting List for 1881. Philadelphia: Lindsay & Blakiston.

The one before us is the thirtieth annual publication of the visiting list, and will be found most conveniently arranged for the use of those for whom it is intended.

Introduction to the Study of Chemical Reactions. By Dr. phil. Edmund Drechsel, Professor of Physiological Chemistry at Leipzig University. Translated with permission of the author and of the publisher, and specially adapted to the use of American students by notes, etc. By N. Fred. Merrill, S.B., Ph.D. New York: John Wiley & Sons. 1880. 12mo., pp. 138.

Chemistry cannot be mastered without a thorough understanding of chemical reactions. A work, endeavoring to explain these, must naturally be devoted to a theoretical consideration of the various changes which take place under different conditions. Such is the case with the little work before us, and, as might be expected, the theories at the present time, adopted by a large number of chemists, are fully considered and ably explained. The book will, therefore, be found very useful to those who enter upon the study of chemistry, or who desire to acquaint themselves with the modern theories bearing upon composition and decomposition. The translator and editor has performed his task well, and the numerous foot-notes and the occasional additions to the text enhance the value of the book. But, in a few cases, the statements are not quite as exact as might be desired. We select from the chapter on "solution of the metals and metallic oxides," where it is stated that, "indeed, iron in a finely divided state, such as that resulting from a reduction of ferric oxide by hydrogen, is pyrophorous, taking fire at once in the air, and, glowing, burns to ferric oxide." This sentence certainly deserves to be rendered with greater precision.

Proceedings of the Convention of Druggists and of the North Carolina Pharmaceutical Association. Munroe, N. C. Pp. 25.

The Convention was held in the Senate chamber at Raleigh, August 11th, and at once proceeded to organize a State pharmaceutical association, a constitution and by-laws being adopted at the afternoon session and the following officers elected: President, E. M. Nadal, of Wilson; Vice Presidents—S. J. Hinsdale, of Fayetteville, Wm. Simpson, of Raleigh, and E. H. Meadows, of Newbern; Secretary, T. C. Smith, of Charlotte; Treasurer, J. S. Pescud, of Raleigh. On the following day the draft of a pharmacy law was discussed, and among the committees appointed was one for memorializing the Legislature in relation to the passage of the pharmacy law.

Proceedings of the Ohio State Pharmaceutical Association at its second Meeting, held at Dayton, O., May 19, 1880. Cleveland, O. Pp. 32.

A brief report of this meeting will be found on page 382 of the "Journal." Among the papers read was one by Mr. R. C. Clark on the *preparation of soft paraffin*, similar to cosmolin, vaselin, petrolina, etc., by the following process:

Take a quantity of crude paraffin, such as settles in the bottom of oil tanks, and which is known in the oil regions as B. S. oil, and add, if necessary to lower the melting point, a sufficient quantity of crude petroleum rich in paraffin, such as Smith's Ferry oil; place the whole in a still and distill off at as low a temperature as possible all oils above 43° Baumé. Filter the residuum through animal charcoal at a temperature of from 150 to 180°F. To make an exceedingly fine article it will

require 3 pounds of residuum and $2\frac{1}{2}$ or 3 pounds of animal charcoal for one pound of finished goods; 2 pounds of residuum will remain in the charcoal.

A paper on *Oleate of mercury* was read by Mr. N. Rosenwasser, in which the author advocates its preparation by combining 5 parts of red mercuric oxide with 13 parts of oleic acid at a temperature of 220°F. , and diluting this to 20 parts by the addition of soft paraffin, which is stated to prevent oxidation and to materially cheapen the product. For liquid oleates paraffin oil will probably answer equally well.

Das Verhalten der Bacterien des Fleischwassers gegen einige Antiseptica. Von Nicolai Jalan de la Croix. Dorpat, 1880. Pp. 110.

The behavior of the bacteria of meatinfusion to several antiseptics.

The infusion was prepared both cold and at the boiling temperature and the experiments made under various conditions, which were alike in each series for the antiseptics tried. The effectiveness for preventing the development of bacteria was found to be in the following order: Chlorine (1 in 30208), corrosive sublimate (1:25250), chlorinated lime (1:11135), sulphurous acid (1:6448), bromine, sulphuric acid, iodine, aluminium acetate, volatile oil of mustard, benzoic acid (1:2867), sodium borosalicylate, picric acid (1:2005), thymol (1:1340), salicylic acid (1:1003), potassium permanganate, carbolic acid (1:669), chloroform, borax, alcohol, eucalyptol. The destruction of living bacteria was still effected by chlorine diluted to 22768, but not by corrosive sublimate if diluted to 6500 parts.

Ein Beitrag zur Kenntniss des Levulins, Triticins und Sinistrins. Von Adolf Weyher v. Reidemeister. Dorpat, 1880. Pp. 61.

A contribution to the knowledge of levulin, triticin and sinistrin.

Levulin was prepared from the tubers of *Helianthus tuberosus*, triticin from the rhizome of *Triticum repens*, and sinistrin from squill. Triticin is easily converted into fruit sugar, partly already by boiling with water, while levulin and sinistrin are not altered by heating their solutions in sealed glass tubes to 100°C. On the other hand, levulin ferments much more rapidly with yeast than triticin and sinistrin. The last two bodies have not been obtained optically inactive, but in the purest state attainable remained levogyre, though in a less degree than had been previously observed by others. Triticin is isomeric with saccharose, while levulin and sinistrin belong to the dextrin group. Levulin sugar and sinistrin sugar are free from dextrose, but rotate polarized light less than levulose.

OBITUARY.

MR. STEPHEN E. MERRIHEW died on the 1st of November, after an illness of six days. The deceased was born at Marcus Hook, Pa., in the year 1802, and removed in early boyhood to the city of Wilmington, Del., where he learned the business of printer, and for some years worked at the trade. He then removed to this city and was employed by Mr. Jno. Grigg, then largely interested in publishing medical

works, and, among others, the "American Journal of Pharmacy" was issued, with his imprint. After a few years Mr. Merrihew entered into business for himself, and in partnership first with Mr. L. C. Gunn and then with Lewis Thompson; he was engaged in printing the Journal ever since it was regularly published. The earnestness, strict integrity and attention to business, which ever characterized him, made him respected among all who knew him, and we feel that it is but fitting that some record of one whose whole business career has been intimately connected with the publication of this journal should be made upon our pages as a tribute to his worth, and to give expression to the regret his death has occasioned.

PROFESSOR DR. PHILIPP PHÖBUS died July 1st. He was born at the Prussian town of Märkisch-Friedland, May 27, 1804, studied medicine, and in 1843 became Professor of Pharmacology at the University of Giessen. Besides several books and pamphlets, he wrote a large number of essays on physical, mineralogical, botanical, pharmaceutical, anatomical and medical subjects. The deceased was one of the most zealous and able advocates for the elevation of pharmacy, and the author of a draft for a German pharmacy law, which was finished in the fall of 1875, but has not been published. He also contributed largely to the International Pharmacopœia, the work on which was begun in 1868 by a number of prominent European pharmacists.

DR. J. RUDOLF VON WAGNER, Professor of Technology at the University of Würzburg, died there October 5, in the 58th year of his age. He had previously been Lecturer on Chemistry in his native city, Leipzig, and Professor at the Polytechnic School of Nuremberg. He wrote a history of chemistry, edited a German edition of Gerhard's Chemistry, and was the author of the well-known hand-book on chemical technology. The Bavarian government sent him as an expert to several international expositions, among them also to that held at Philadelphia in 1876.

DR. CARL PHILIPP FALCK, Professor of Pharmacology at the University of Marburg, died June 30, in the 64th year of his age. For several years previous to 1857 he was one of the contributors to the well-known Cannstatt's Jahresbericht, and wrote the reports on pharmaco-dynamics and toxicology.

WALTER W. KOEHLER, a graduate of the Philadelphia College of Pharmacy, Class 1877, died recently of heart disease, at St. Augustine, Fla., aged 23 years. He was a Philadelphian by birth, and for about two years prior to his death carried on, in connection with his brother, a retail drug store in Brooklyn, N. Y.

PROFESSOR WILHELM PHILIPP SCHIMPER died, in Strassburg, March 20th, in the 73d year of his life. He was born in Lower Alsace, and in 1835 became Naturalist of the Geological and Mineralogical Museum, and in 1862 Professor of Geology at Strassburg, which position he held until 1879. The deceased was well known for his researches in botany, zoology and mineralogy. He was the uncle of the botanists Carl Friedrich and Wilhelm Schimper, and his son Wilhelm has already become known for his botanical researches.

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